

DF Effluent Characterization Summary

1. **Process.** The Field Deployable Hydrolysis System (FDHS) mixes DF with water at a ratio of 1:5 (DF:water). The primary hydrolysis products of the DF:Water reaction are Methylphosphonic Acid (MPA; CAS 993-13-5) and Hydrogen Fluoride (HF; CAS7681-49-4). The resulting acidic solution is transferred out of the FDHS into a hastelloy container where it is titrated to a pH of approximately 7 using 25% NaOH(aq). As a result of the pH adjustment using NaOH(aq), the HF is neutralized to Sodium Fluoride (NaF; 7681-49-4) and the MPA is neutralized to its mono- or di-sodium salt in aqueous solution.

2. **Hazard Identification.** Example Material Safety Data Sheets for the components are attached:
 - a. DF
 - b. 25 % NaOH
 - c. MPA
 - d. HF
 - e. NaF

3. DF Effluent Characterization Summary Table

PARAMETER	RESULTS	LOQ
pH EPA Method 9040		
pH	6.60	
Mercury EPA Method 7470A (µg/L)		
Hg	1.4	0.20
Metals EPA Method 200.2 (mg/L)		
Barium	0.17	0.020
Chromium	1.6	0.040
Silver	0.082	0.020
Total Organic Carbon EPA Method 415.3 (mg/L)		
TOC	15,000	500
Total Dissolved Solids EPA Method 2540C (mg/L)		
TDS	220,000	1000
Total Suspended Solids EPA Method 2540D (mg/L)		
TSS	2,700	100
Semi-Volatiles EPA Method 8270		
All analyte/elements were not detected at or above the limit of quantitation (LOQ)		
Volatiles EPA Method 8260		
All analyte/elements were not detected at or above the limit of quantitation (LOQ)		
Viscosity ECBC Test*(cSt)		
25.0°C	3.63 ±0.12	
35.0°C	2.79 ±0.07	
50.0°C	1.66 ±0.04	
Liquid Density ECBC Test*(g/mL)		
16.0°C	1.2171 ±0.0005	
25.0°C	1.2121 ±0.0002	
35.0°C	1.2062 ±0.0011	

*These data are generated from tests conducted at ECBC Chemical Analysis and Physical Properties Branch. DF hydrolysate was generated specifically for the testing and was neutralized after reaction to a pH of 7.

4. The Edgewood Chemical Biological Center (ECBC), Department of the Army believes that the data contained herein are actual and are the results of the tests conducted by ECBC experts. The data are not to be taken as a warranty or representation for which the Department of the Army or ECBC assumes legal responsibility. They are offered solely for consideration. Any use of this data and information contained in this analysis must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.

Section II - Ingredients

Ingredients/Name: DF

Percentage by Weight: 100%

Section III - Physical Data

Boiling Point: 99.7 °C

Vapor Pressure (torr): 36 @ 25 °C

Vapor Density (Air=1): 3.4

Solubility: Immediately decomposes with the addition of water

Specific Gravity (H₂O=1): 1.359 @ 25 °C

Freezing/Melting Point: -36.9 °C

Liquid Density (g/ml): 1.3595 @ 25 °C

Volatility (mg/m³): 190,000 @ 25 °C

Viscosity (CENTIPOISE): Not Available

Molecular Weight (g/mol): 100.00

Appearance and Odor: Clear liquid. Pungent, acid like.

Section IV - Fire and Explosion Data

Flashpoint: (Method Used): Nonflammable

Auto ignition Temperature: Not Available

Flammability Limits (% By Volume): Not Available

Extinguishing Media: CO₂ and dry chemical. Avoid use of extinguishing methods that will splash or spread DF.

Unusual Fire & Explosion Hazards: In the presence of water, DF hydrolyzes rapidly to methylphosphono-fluoridic acid (MF) and hydrogen fluoride (HF); MF then hydrolyzes slowly to methylphosphonic acid (MPA). These extremely corrosive products (MF & HF) could react with metals to give hydrogen gas, an extreme fire/explosion hazard. Hydrogen fluoride (HF) will also react with and degrade glass and concrete. (Note: HF cannot react with glass to give hydrogen).

Special Fire Fighting Procedures: All persons not engaged in extinguishing the fire should be immediately evacuated from the area. Fires involving DF should be contained to prevent contamination to uncontrolled areas. When responding to a fire alarm in buildings or areas containing agents, fire-fighting personnel should wear full firefighter protective clothing (flame resistant) during chemical agent fire-fighting and fire rescue operations.

Respiratory protection is required. Positive pressure, full facepiece, NIOSH-approved self-contained breathing apparatus (SCBA) will be worn where there is danger of oxygen deficiency and when directed by the fire chief or chemical accident/incident (CAI) operations officer. In cases where fire fighters are responding to a chemical accident/incident for rescue/reconnaissance purposes, they will wear appropriate levels of protective clothing (see Section VIII).

Do not breathe fumes. Skin contact with DF must be avoided at all times. Although the fire may destroy most of the DF, care must still be taken to assure the DF or contaminated liquids do not further contaminate other areas or sewers. Contact with the DF liquid or vapor can be fatal.

Section V – Health Hazard Data

Suggested Limit: For occupational exposure, the suggested limit for DF is an 8 hour time weighted average (TWA) of 0.008 mg/m^3 . To date, the Occupational Safety and Health Administration (OSHA) has not promulgated a PEL for DF, nor have these values been officially adopted as part of a DA special Occupational Safety and Health Standards for DF in accordance with DODI.6055.1.

Routes of Entry: Routes of entry for DF can be through liquid contact with skin, inhalation of airborne vapor and ingestion.

Effects of Overexposure: DF vapors have a pungent odor and may cause severe and painful irritation of the eyes, nose, throat and lungs. Severe acute exposure may cause pulmonary edema, the onset of which could be delayed for several hours. Chronic exposure could presumably lead to fluorosis in extreme cases. Severe skin irritation may also occur as a result of hydrolysis of DF by skin moisture, forming hydrogen fluoride, which may cause second or third degree burns upon short contact with exposed skin surfaces. Oral ingestion of DF may cause severe tissue destruction in the gastrointestinal tract. Effects on the kidney were noted in the rat following exposure to high levels of DF. Long term inhalation exposure, even below levels necessary to produce acute respiratory irritation, may result in chronic upper and lower respiratory effects, probably secondary to chronic low-level inflammation. High overexposure to DF may cause inhibition of cholinesterase activity. DF is not teratogenic in the rat or rabbit by the inhalation route of exposure. Individuals with a history of cardiac or pulmonary conditions should be carefully evaluated before being employed in areas where there is potential exposure to DF. DF was studied in a battery of mutagenicity tests (in vitro mutagenicity tests), and results proved negative in six out of seven tests.

DF presently is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), National Toxicology Program (NTP), Occupational Safety and Health Administration (OSHA), or American Conference of Governmental Industrial Hygienists (ACGIH).

Toxicity Values:

Liquid in eye

ED50 = 0.2 mg/eye – temporary corneal damage

ED50 = 10 mg/eye – permanent corneal damage

Emergency and First Aid Procedures:

NOTE: Individuals intent on rendering first aid need to take steps for self protection such as donning a protective mask and other protective equipment. Decontaminate the individual as indicated below.

Vapor Exposure: Immediately don a protective mask. Move to a clean air environment and decontaminate by removing all clothing and shampooing or rinsing the hair to prevent vapor off gassing.

Liquid Skin Exposure: Immediately move away from area of contamination and don a protective mask. Wash DF and/or its hydrolysis product (HF) from the skin with copious amounts of water and continue washing until

medical help can be obtained. If available, treat burns by soaking in iced Zephiran, Epsom salt or dilute fresh solution of sodium bicarbonate. Magnesium oxide and magnesium sulfate dressing can be used if available. Seek medical attention **Immediately**.

Eye Contact: **Immediately** move away from the area of contamination and begin flushing eyes, mucous membranes, or open wounds with sterile saline or water. Flush the eyes immediately with sterile saline or water by tilting the head to the side, pulling the eyelids apart with gloved fingers and pouring slowly into the eyes. A Morgan lens may also be used for continuous eye irrigation. Seek medical attention **Immediately**.

Ingestion: Do not induce vomiting. First symptoms are likely to be gastrointestinal. Seek medical attention **Immediately**. **Do not handle vomited material to avoid further contamination.**

Inhalation: If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Mouth-to-mouth resuscitation should be used when approved mask-bag or oxygen delivery systems are not available. Do not use mouth-to-mouth resuscitation when facial contamination is present. Seek medical attention **Immediately**.

Section VI - Reactivity Data

Stability: Remains stable for at least 20 years when stored in high-density polyethylene containers enclosed in steel.

Incompatibility: Avoid contact with water mist or sprays, glass, concrete, natural rubber, metal, alkaline materials and some organics. Never store DF with alcohols. DF will react with alcohols to form a lethal chemical, such as crude GB.

Decomposition Temperature: Not Available

Rate of Hydrolysis: Virtually instantaneous to produce methylphosphonofluoridic acid (MF) and hydrogen fluoride (HF) which are also toxic. Further hydrolysis is a slow reaction that produces methylphosphonic acid (MPA); MF $t_{1/2}$ = 162 days @ pH 7, $t_{1/2}$ = 90 days @ pH 4 and $t_{1/2}$ = 47 days @ pH 3.

Hazardous Decomposition: Hydrolyzes to give toxic products, MF and HF. Further hydrolysis of MF results in MPA and a second mole of HF. HF may react with some metals and give off hydrogen gas, a potential fire and explosive hazard.

Hazardous Polymerization: Will not occur.

Section VII – Spill, Leak, and Disposal Procedures

Steps To Be Taken In Case Material Is Released or Spilled: Only personnel in full protective clothing will be allowed in an area where DF is spilled (See Section VIII). In case of personnel contamination, see Section V.

Spills on porous surfaces (concrete, wood, plastic, etc.) should be cleaned and neutralized immediately; otherwise, it will be absorbed and become a hazard indefinitely. All spills must be contained, e.g., by covering with vermiculite, diatomaceous earth, clay or fine sand followed by a slurry of powdered limestone, slaked lime, soda ash, or sodium bicarbonate. Scoop up all this material and any contaminated soil or substrate and place in a fully removable head drum with a high density, polyethylene liner and labeled as a corrosive material in accordance with EPA and DOT requirements. Provide adequate ventilation and remove any ignition source. Avoid contact with liquid and leaking vapors (pungent acid-like odor can be detected at very low concentrations). Leaks in DF containers can be visually detected by crystalline deposits near point of leak or by discoloration or blistering of paint near point of leak. Contaminated clothing and shoes should be removed immediately and washed thoroughly with water before reuse.

Spills inside a DF production facility must be washed down immediately with copious amounts of water. The DF contaminated water must be disposed IAW local, State and Federal regulations. Adequate ventilation is mandatory to prevent possible build-up of hydrogen caused by the reaction of DF hydrolysis products with metals, etc. Release of DF contaminated water to the sanitary sewer or outside the DF production facility is not permitted.

Waste Disposal Method: DF undergoes hydrolysis upon neutralization to yield sodium fluoride and the sodium salt of methylphosphonic acid. Neutralized DF from routine reaction processes or from spills may be disposed through an EPA/state approved hazardous waste transportation and disposal contractor. However, a RCRA treatment facility permit would be required to operate facilities set up just for DF neutralization. Containers used to contain spills must be properly constructed and labeled in accordance with EPA and DOT requirements. No disposal is permitted through sanitary sewers. Large quantities of spill cleanup residues (including soil or DF contaminated substrate) should be incinerated, only in an EPA (state) permitted hazardous waste incinerator. Neutralized slurry or any other neutralized DF containing waste can be disposed of in an EPA approved landfill. The neutralized waste contains a fluoride salt and must be handled accordingly.

Open pit burning or burying of DF or items containing or contaminated with DF in any quantity is prohibited.

Section VIII- Special Protection Information

Respiratory Protection:

Concentration

Respiratory Protective Equipment

< 0.008 mg/m³

Escape respirators shall be available when necessary:
Any NIOSH approved full face piece respirator with acid gas canister
Any NIOSH approved escape SCBA

> or = 0.008 mg/m³
and < 0.4 mg/m³

Any NIOSH approved full face piece respirator with acid gas cartridges or canister. Any NIOSH approved full face piece pressure-demand SCBA. Any NIOSH approved full face piece, positive pressure, supplied air respirator.

> or = 0.4 mg/m³
And unknown concentrations

Any NIOSH approved Air Supply Line with Full Face Respirator and Auxiliary Self-contained Breathing Apparatus (SCBA), or SCBA.

Ventilation

Local Exhaust: Mandatory. Must be filtered or scrubbed. Air emissions shall meet local, state and federal regulations.

Special: Chemical laboratory hoods will have an average inward face velocity of 100 linear feet per minute (lfpm) +/- 20% with the velocity at any point not deviating from the average face velocity by more than 20%. Existing laboratory hoods will have an inward face velocity of 150 lfpm +/- 20%. Laboratory hoods will be located such that cross drafts do not exceed 20% of the inward face velocity. A visual performance test using smoke producing devices will be performed in assessing the ability of the hood to contain agent DF.

Other: Recirculation of exhaust air from agent areas is prohibited. No connection between agent area and other areas through the ventilation system is permitted. Emergency backup power is necessary. Hoods should be tested semiannually or after modification or maintenance operations. Operations should be performed 20 centimeters inside hoods.

Protective Gloves: Butyl Rubber, PVC or neoprene gauntlet

Eye Protection: At a minimum, safety glasses with side shields will be worn. For splash hazards use goggles and face shield. Maintain eyewash facilities in work area.

Other Protective Equipment: For laboratory operations, wear lab coats, gloves and have mask readily accessible. Hooded butyl or neoprene chemical-resistant clothing (i.e., overalls and long sleeve jacket; or one or two-piece chemical splash suit) and chemical-resistant boots.

Section IX - Special Precautions

Precautions To Be Taken In Handling and Storing: When handling agents, the buddy system will be incorporated. No smoking, eating, or drinking in areas containing agents is permitted. Containers should be periodically inspected for leaks. Stringent control over all personnel practices must be exercised. Decontaminating equipment will be conveniently located. Exits must be designed to permit rapid evacuation. Chemical showers, eyewash stations, and personal cleanliness facilities must be provided. Wash hands before meals and, as appropriate, shower thoroughly with special attention given to hair, face, neck, and hands using plenty of soap and water before leaving at the end of the workday.

Other Precautions: Store in lead carboys and wax, high density polyethylene bottles or nickel-lined containers in well ventilated areas. Avoid storage in metal containers since HF (DF hydrolysis product) corrodes metals to give explosive hydrogen. Do not use sparking tools around DF tanks and pipes. Under no circumstances should DF be stored with alcohols or alcohol compounds.

Section X - Transportation Data

Proper Shipping Name: Toxic by inhalation liquid, corrosive, n.o.s. (Methylphosphonic Difluoride)

UN ID Number: UN3390

Dot Hazard Class: 6.1, 8, Packaging Group I, Inhalation Hazard Zone B

Dot Label: Poison Inhalation Hazard or Toxic Inhalation Hazard and Corrosive. See 49 CFR 172.400a(a)(3) for exceptions to unit packaging labeling and 173.7(b) for other exceptions when material is transported by Technical Escort Units.

NOTE: "Poison" and "Toxic" are used interchangeably for all markings, labels and placards in continental US transportation. "Toxic" is required for international transportation.

Dot Marking: Toxic by inhalation liquid, corrosive, n.o.s. (Methylphosphonic Difluoride), UN3390, Inhalation Hazard Zone B

Dot Placard: Poison Inhalation Hazard or Toxic Inhalation Hazard

Emergency Accident Precautions and Procedures: See Sections IV, VI, VII and VIII.

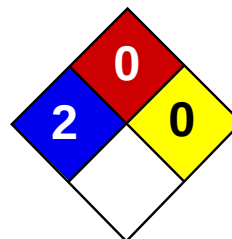
Precautions To Be Taken In Transportation: Motor vehicles will be placarded regardless of quantity. Drivers will be given full information regarding shipment and conditions in case of an emergency. Keep from contact with water or moisture; keep away from heat or ignition sources. Shipment of DF must not contain alcohols or alcohol compounds. AR 50-6 deals specifically with the shipment of chemical agents.

The Edgewood Chemical Biological Center (ECBC), Department of the Army believes that the data contained

herein are actual and are the results of the tests conducted by ECBC experts. The data is not to be taken as a warranty or representation for which the Department of the Army or ECBC assumes legal responsibility. This information is offered solely for consideration. Any use of this data and information contained in this MSDS must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.



Science Lab.com
Chemicals & Laboratory Equipment



Health	2
Fire	0
Reactivity	0
Personal Protection	

Material Safety Data Sheet

Sodium Hydroxide, 25% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium Hydroxide, 25%

Catalog Codes: SLS4210

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Sodium hydroxide; Water

CI#: Not applicable.

Synonym:

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium hydroxide	1310-73-2	25
Water	7732-18-5	75

Toxicological Data on Ingredients: Sodium hydroxide LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion. Hazardous in case of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

Non-corrosive for skin. Non-irritant for skin. Non-sensitizer for skin. Non-permeator by skin. Non-irritating to the eyes. Non-hazardous in case of ingestion. Non-hazardous in case of inhalation. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe

skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Finish by rinsing thoroughly with running water to avoid a possible infection. Cold water may be used.

Skin Contact:

If the chemical got onto the clothed portion of the body, remove the contaminated clothes as quickly as possible, protecting your own hands and body. Place the victim under a deluge shower. If the chemical got on the victim's exposed skin, such as the hands : Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spill:

Corrosive liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep container dry. Do not breathe gas/fumes/ vapour/spray. Never add water to this product In case of insufficient ventilation, wear suitable respiratory equipment If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes Keep away from incompatibles such as acids.

Storage:

Alkalis may be stored in heavy duty gauge steel containers. Corrosive materials should be stored in a separate safety storage cabinet or room.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

Sodium hydroxide CEIL: 2 (mg/m3) from ACGIH [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Odorless.

Taste: Alkaline. Bitter. (Strong.)

Molecular Weight: Not applicable.

Color: Clear Colorless.

pH (1% soln/water): Basic.

Boiling Point: The lowest known value is 100°C (212°F) (Water).

Melting Point: Not available.

Critical Temperature: Not available.

Specific Gravity: Weighted average: 1.15 (Water = 1)

Vapor Pressure: The highest known value is 17.535 mm of Hg (@ 20°C) (Water).

Vapor Density: The highest known value is 0.62 (Air = 1) (Water).

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Extremely reactive or incompatible with acids.

Corrosivity:

Highly corrosive in presence of aluminum. Slightly corrosive to corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available. LC50: Not available.

Chronic Effects on Humans: The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (corrosive, irritant), of ingestion. Hazardous in case of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 8: Corrosive liquid.

Identification: : Sodium hydroxide, solution (Sodium hydroxide) : UN1824 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information**Federal and State Regulations:**

Pennsylvania RTK: Sodium hydroxide Massachusetts RTK: Sodium hydroxide TSCA 8(b) inventory: Sodium hydroxide; Water

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:**WHMIS (Canada):**

CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC): R35- Causes severe burns.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 12:05 PM

Last Updated: 05/21/2013 12:00 PM

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume

no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.

SIGMA-ALDRICH

sigma-aldrich.com

Material Safety Data Sheet

Version 5.1

Revision Date 12/04/2013

Print Date 12/06/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Methylphosphonic acid

Product Number : 289868

Brand : Aldrich

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Harmful by ingestion., Corrosive

GHS Classification

Acute toxicity, Oral (Category 4)

Skin corrosion (Category 1B)

Serious eye damage (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H302

Harmful if swallowed.

H314

Causes severe skin burns and eye damage.

Precautionary statement(s)

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310

Immediately call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard: 3

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 3

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation	May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin	Harmful if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.
Ingestion	Harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : CH₅O₃P
Molecular Weight : 96.02 g/mol

Component		Concentration
Methylphosphonic acid		
CAS-No.	993-13-5	<= 100 %
EC-No.	213-607-2	

4. FIRST AID MEASURES**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Oxides of phosphorus

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form	solid
Colour	white

Safety data

pH	no data available
Melting point/freezing point	Melting point/range: 105 - 107 °C (221 - 225 °F) - lit.
Boiling point	no data available
Flash point	not applicable

Ignition temperature	no data available
Auto-ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents, Strong bases

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Oxides of phosphorus

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

no data available

Inhalation LC50

no data available

Dermal LD50

no data available

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitisation

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

- | | |
|-------------------|---|
| Inhalation | May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. |
| Ingestion | Harmful if swallowed. |
| Skin | Harmful if absorbed through skin. Causes skin burns. |
| Eyes | Causes eye burns. |

Signs and Symptoms of Exposure

Cough, Shortness of breath, Headache, Nausea, Vomiting

Synergistic effects

no data available

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION**Toxicity**

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3261 Class: 8 Packing group: II
Proper shipping name: Corrosive solid, acidic, organic, n.o.s. (Methylphosphonic acid)
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 3261 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Methylphosphonic acid)
Marine pollutant: No

IATA

UN number: 3261 Class: 8 Packing group: II
Proper shipping name: Corrosive solid, acidic, organic, n.o.s. (Methylphosphonic acid)

15. REGULATORY INFORMATION

OSHA Hazards

Harmful by ingestion., Corrosive

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methylphosphonic acid	993-13-5	

New Jersey Right To Know Components

	CAS-No.	Revision Date
Methylphosphonic acid	993-13-5	

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

Copyright 2013 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SIGMA-ALDRICHsigma-aldrich.com**Material Safety Data Sheet**

Version 5.0

Revision Date 09/03/2012

Print Date 10/18/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Hydrogen fluoride

Product Number : 47582

Brand : Sigma-Aldrich

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION**Emergency Overview****OSHA Hazards**

Target Organ Effect, Toxic by inhalation., Highly toxic by ingestion, Highly toxic by skin absorption, Corrosive

Target Organs

Liver, Kidney

GHS Classification

Acute toxicity, Oral (Category 2)

Acute toxicity, Inhalation (Category 2)

Acute toxicity, Dermal (Category 1)

Skin corrosion (Category 1A)

Serious eye damage (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H300 + H310

Fatal if swallowed or in contact with skin

H314

Causes severe skin burns and eye damage.

H330

Fatal if inhaled.

Precautionary statement(s)

P260

Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P264

Wash hands thoroughly after handling.

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection.

P284

Wear respiratory protection.

P302 + P350

IF ON SKIN: Gently wash with plenty of soap and water.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310

Immediately call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard: 4
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

NFPA Rating

Health hazard: 4
Fire: 0
Reactivity Hazard: 0

Potential Health Effects

Inhalation Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin May be fatal if absorbed through skin. Causes skin burns.
Eyes Causes eye burns. Causes severe eye burns.
Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Hydrofluoric acid

Formula : HF

Molecular Weight : 20.01 g/mol

Component		Concentration
Hydrofluoric acid		
CAS-No.	7664-39-3	-
EC-No.	231-634-8	
Index-No.	009-003-00-1	

4. FIRST AID MEASURES**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES**Conditions of flammability**

Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Light sensitive. Hygroscopic.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Hydrofluoric acid	7664-39-3	STEL	6 ppm	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Fluorosis Upper Respiratory Tract, Lower Respiratory Tract, skin & eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		C	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Fluorosis Upper Respiratory Tract, Lower Respiratory Tract, skin & eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		TWA	3 ppm	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	3 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z2
	Z37.28-1969			
		TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	Varies with compound			

		TWA	3 ppm 2.5 mg/m3	USA. NIOSH Recommended Exposure Limits
	15 minute ceiling value			
		C	6 ppm 5 mg/m3	USA. NIOSH Recommended Exposure Limits
	15 minute ceiling value			

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	colourless

Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	33 hPa (25 mmHg) at 20 °C (68 °F)
Density	1.150 g/cm3
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour	0.8

density

Odour no data available

Odour Threshold no data available

Evaporation rate no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Metals, Alkali metals, Strong bases

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

no data available

Inhalation LC50

LCLO Inhalation - Human - 30 h -

LC50 Inhalation - rat - 1 h -

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:Change in motor activity (specific assay). Gastrointestinal:Changes in structure or function of salivary glands.

LC50 Inhalation - mouse - 1 h -

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Corneal damage. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other. Lungs, Thorax, or Respiration:Dyspnea.

Dermal LD50

no data available

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

Eyes - Human - Risk of serious damage to eyes.

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

Genotoxicity in vivo - rat - Inhalation

Cytogenetic analysis

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Hydrofluoric acid)

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a

carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

Reproductive toxicity - rat - Inhalation

Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Teratogenicity

Developmental Toxicity - rat - Inhalation

Effects on Embryo or Fetus: Fetal death.

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion	May be fatal if swallowed.
Skin	May be fatal if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns. Causes severe eye burns.

Signs and Symptoms of Exposure

Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia., Material can cause severe burns and blistering which may not be immediately painful or visible. The full extent of tissue damage may not exhibit itself for 12-24 hours after exposure., Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., necrosis of the skin

Synergistic effects

no data available

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION**Toxicity**

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

UN number: 1052 Class: 8 (6.1) Packing group: I

Proper shipping name: Hydrogen fluoride, anhydrous

Reportable Quantity (RQ): 100 lbs

Marine pollutant: No

Poison Inhalation Hazard: Hazard zone C

IMDG

UN number: 1052 Class: 8 (6.1) Packing group: I

EMS-No: F-C, S-U

Proper shipping name: HYDROGEN FLUORIDE, ANHYDROUS

Marine pollutant: No

IATA

UN number: 1052 Class: 8 (6.1)

Proper shipping name: Hydrogen fluoride, anhydrous

IATA Passenger: Not permitted for transport

IATA Cargo: Not permitted for transport

15. REGULATORY INFORMATION**OSHA Hazards**

Target Organ Effect, Toxic by inhalation., Highly toxic by ingestion, Highly toxic by skin absorption, Corrosive

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

	CAS-No.	Revision Date
Hydrofluoric acid	7664-39-3	1993-04-24

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Hydrofluoric acid	7664-39-3	1993-04-24

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Hydrofluoric acid	7664-39-3	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Hydrofluoric acid	7664-39-3	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
Hydrofluoric acid	7664-39-3	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION**Further information**

Copyright 2012 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SIGMA-ALDRICH

sigma-aldrich.com

Material Safety Data Sheet

Version 5.1

Revision Date 02/27/2013

Print Date 12/06/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Sodium fluoride solution

Product Number : 919

Brand : Sigma

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Target Organ Effect, Highly toxic by ingestion, Irritant

Target Organs

Kidney, Heart, Bone, Nerves., Gastrointestinal tract, Teeth., Damage to the lungs.

GHS Classification

Acute toxicity, Oral (Category 4)

Skin irritation (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word : Warning

Hazard statement(s)

H302

Harmful if swallowed.

H316

Causes mild skin irritation.

Precautionary statement(s)

none

Other hazards

Contact with acids liberates very toxic gas.

HMIS Classification

Health hazard: 3

Chronic Health Hazard: *

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 3

Fire: 0
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin. Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : FNa
Molecular Weight : 41.99 g/mol

Component		Classification	Concentration
Sodium fluoride			
CAS-No.	7681-49-4	Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2; H301, H315, H319, EUH032	1 - 5 %
EC-No.	231-667-8		
Index-No.	009-004-00-7		

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area. Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesemia and cardiac arrhythmias should be monitored for, since they can occur after exposure.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES**Conditions of flammability**

Not flammable or combustible.

Suitable extinguishing media

Dry powder

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride, Sodium oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Do not flush with water. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Never allow product to get in contact with water during storage. Do not store near acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Sodium fluoride	7681-49-4	TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	2.5 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	2.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z2
		TWA	2.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
Remarks	CAS number varies with compound			
		TWA	2.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z2
	Z37.28-1969			
		TWA	2.5 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	2.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Bone damage Fluorosis Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen varies			

Personal protective equipment**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form	liquid
Colour	no data available

Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Auto-ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	1.000 g/cm3
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evapouration rate	no data available

10. STABILITY AND REACTIVITY**Chemical stability**

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong acids

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Hydrogen fluoride, Sodium oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION**Acute toxicity****Oral LD50**

no data available

Inhalation LC50

no data available

Dermal LD50

no data available

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

Eyes: no data available

Respiratory or skin sensitisation

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sodium fluoride)

3 - Group 3: Not classifiable as to its carcinogenicity to humans (Sodium fluoride)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects**Inhalation**

May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion

May be fatal if swallowed.

Skin

May be harmful if absorbed through skin. Causes skin irritation.

Eyes

Causes eye irritation.

Signs and Symptoms of Exposure

Salivation, Nausea, Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia., burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache

Synergistic effects

no data available

Additional Information

RTECS: Not available

12. ECOLOGICAL INFORMATION**Toxicity**

no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS**Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION**OSHA Hazards**

Target Organ Effect, Highly toxic by ingestion, Irritant

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

CAS-No.

Revision Date

Sodium fluoride

7681-49-4

2007-03-01

Pennsylvania Right To Know Components

Water

CAS-No.
7732-18-5

Revision Date

Sodium fluoride

7681-49-4

2007-03-01

New Jersey Right To Know Components

Water

CAS-No.
7732-18-5

Revision Date

Sodium fluoride

7681-49-4

2007-03-01

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION**Text of H-code(s) and R-phrases mentioned in Section 3**

Acute Tox.	Acute toxicity
EUH032	Contact with acids liberates very toxic gas.
Eye Irrit.	Eye irritation
H301	Toxic if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
Skin Irrit.	Skin irritation

Further information

Copyright 2013 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.



DEPARTMENT OF THE ARMY
US ARMY INSTITUTE OF PUBLIC HEALTH
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MARYLAND 21010-5403

MCHB-IP-L

26 November 2013

MEMORANDUM FOR Edgewood Chemical and Biological Center (/Mr. Steven Norman), Gunpowder, MD 21010

SUBJECT: Laboratory Sciences (LS) Final Analytical Report

1. This is LS Final Analytical Report for:

Project Site: ECBC DEMIL EFFLUENTS
Funding:
LS Work Order #: 9399
Report Serial #: 53010

2. Please contact us if this report or any of our services did not meet your needs or expectations.

3. Point of contact for additional information is Mr. David F. Morrow,
DSN 584-2208 or commercial 410-436-2208.

CRAIG MISER
Chief, Laboratory Analytical Division - Inorganic

The information contained in this document and any attachments is FOUO and is intended for the addressee only. Reading, copying, disclosure or use by anyone else is unauthorized. If you are not the intended recipient, please destroy this document and any attachments and advise the sender immediately by calling 410-436-2208/DSN 584-2208.

**SAMPLE SUMMARY**

Workorder: 9399 ECBC DEMIL EFFLUENTS

All samples were inspected and observed to conform to our receipt policies, except as noted.

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Cancel Code
93990001	12-0026-73	Water (Miscellaneous)	11/19/2013	11/19/2013	
93990002	VOC BLANK	Water (Miscellaneous)	11/19/2013	11/19/2013	

**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
93990001	12-0026-73	EPA 5030B	VSV/2860	EPA 8260B	VSV/2863
93990002	VOC BLANK	EPA 5030B	VSV/2860	EPA 8260B	VSV/2863
93990001	12-0026-73	EPA 3510C	VSV/2864	EPA 8270C	VSV/2865
93990001	12-0026-73	EPA 200.2 Prep	MET/6073	EPA 200.7	MET/6079
93990001	12-0026-73	EPA 7470A	MET/6074	EPA 7470A	MET/6075
93990001	12-0026-73	EPA 415.3	SPC/5331	EPA 415.3	SPC/5334

**PROJECT SUMMARY**

Workorder: 9399 ECBC DEMIL EFFLUENTS

Workorder Comments

The sample receipt temperatures were 12 degrees C (Metals and SVOC analysis) and 15 degrees C (VOC, TOC, and pH/TSS/TDS analysis). However, the samples were delivered to the laboratory soon after collection. The sample cooling process was initiated in the field, and the samples were refrigerated upon receipt at the laboratory.

Batch Comments**Batch:** SPC/5334 - EPA 415.3 Water

The instrument response for TOC in the Continuing Calibration Verification (CCV) standard was below the lower QC limit, which may indicate a negative bias for this analyte. The associated LCS/LCSD were both within QC limits; therefore, there should be little or no impact on data usability.

Procedure Comments**Lab ID:** 93990001 **Sample ID:** 12-0026-73 **Procedure:** EPA 8260

Sample and MS/MSD were analyzed at a 1000:1 dilution factor due to significant interferences associated with the sample matrix. The matrix interference prevented analysis at lower dilution factor. All target analytes are less than the LOQ.

Sample was received at a pH of 7 and contained head space.

The recoveries for trans-1,2-dichloroethene, 1,1,1-trichloroethane, bromodichloromethane, and 1,2-dibromoethane were just below the lower QC limits in the MS and/or MSD, which may indicate a negative bias for these analytes. These deviations are considered minimal and the data usability should not be impacted.

The recovery for the surrogate dibromofluoromethane was just below the lower QC limit of 92.1% in the sample at 91.8%. This deviation is considered minimal and the data usability should not be impacted.

Lab ID: 93990001 **Sample ID:** 12-0026-73 **Procedure:** EPA 8270

Due to a matrix interference, only 10 mL of this sample was extracted instead of the standard method volume of 1000 mL. This increased the LOQ for the target analytes by a factor of 100. The matrix interference prevented analysis at a lower dilution factor.

The recovery for the surrogate p-Terphenyl-d14 was slightly above the upper QC limit of 117% in the sample at 118%, which may indicate a positive bias for certain base/neutral extractable analytes in the sample. However, no base/neutral extractable analytes were detected in the sample.

Lab ID: 93990001 **Sample ID:** 12-0026-73 **Procedure:** EPA 200.7

Due to matrix interference, the LOQs for all elements were increased by a factor of 2.

The recoveries for Arsenic, Selenium and Silver recovered above the upper QC limit in the MS and MSD which may indicate a positive bias for these analytes.

The recovery for Chromium recovered below the lower QC limit in the MS and MSD which may indicate a negative bias for this analyte.

Lab ID: 93990001 **Sample ID:** 12-0026-73 **Procedure:** EPA 415.3

The calculated MS for TOC should be considered invalid due to the native concentration of this analytes in the sample being greater than 4 times the amount spiked into the MS

Lab ID: 93990002 **Sample ID:** VOC BLANK **Procedure:** EPA 8260

The recovery for the surrogate dibromofluoromethane was just below the lower QC limit of 92.1% in the sample at 92.0%. This deviation is considered minimal and the data usability should not be impacted.



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990001
Sample ID: 12-0026-73Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL	Date Prepared/By	Date Analyzed/By	DF	Qual
ICP Metals									
Analysis Desc: EPA 200.7		Preparation Method: EPA 200.2 Prep							
		Analytical Method: EPA 200.7							
Arsenic	0.40U		mg/L	0.40	0.014	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Barium	0.17		mg/L	0.020	0.0015	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Cadmium	0.020U		mg/L	0.020	0.0016	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Chromium	1.6		mg/L	0.040	0.00085	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Lead	0.20U		mg/L	0.20	0.015	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Selenium	0.40U		mg/L	0.40	0.0087	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Silver	0.082		mg/L	0.020	0.00088	11/21/2013 13:19 JRB	11/25/2013 00:00 KLH	2	
Semivolatiles									
Analysis Desc: EPA 8270C		Preparation Method: EPA 3510C							
		Analytical Method: EPA 8270C							
1,2,4-Trichlorobenzene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
1,2-Dichlorobenzene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
1,3-Dichlorobenzene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
1,4-Dichlorobenzene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,2'-oxybis(1-Chloropropane)	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4,5-Trichlorophenol	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4,6-Trichlorophenol	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4-Dichlorophenol	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4-Dimethylphenol	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4-Dinitrophenol	2000U		ug/L	2000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4-Dinitrotoluene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,6-Dinitrotoluene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Chloronaphthalene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: **93990001**
Sample ID: **12-0026-73**Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
2-Chlorophenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Methyl-4,6-dinitrophenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Methylnaphthalene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Methylphenol {o-Cresol}	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Nitroaniline	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Nitrophenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
3-Nitroaniline	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
4-Chloro-3-methylphenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
4-Chloroaniline	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
4-Nitroaniline	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
4-Nitrophenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Acenaphthene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Acenaphthylene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Anthracene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benzo[a]pyrene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benzo[b]fluoranthene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benzo[g,h,i]perylene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benzo[k]fluoranthene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benzyl alcohol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Benz[a]anthracene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Bis(2-chloroethoxy)methane	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Bis(2-chloroethyl)ether	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Butylbenzylphthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Chrysene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: **93990001**
Sample ID: **12-0026-73**Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
Di(2-ethylhexyl)phthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Di-n-butylphthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Di-n-octylphthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Dibenzofuran	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Dibenz[a,h]anthracene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Diethylphthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Dimethylphthalate	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Fluoranthene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Fluorene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Hexachlorobenzene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Hexachlorobutadiene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Hexachlorocyclopentadiene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Hexachloroethane	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Indeno[1,2,3-cd]pyrene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Isophorone	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
m,p-Methylphenol {m,p-Cresol}	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
N-Nitrosodimethylamine	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
N-Nitrosodiphenylamine	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
N-Nitrosodipropylamine	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Naphthalene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Nitrobenzene	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
p-Bromophenyl phenyl ether	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
p-Chlorophenyl phenyl ether	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Pentachlorophenol	1000U		ug/L	1000	500 11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990001

Date Received: 11/19/2013

Matrix: Water (Miscellaneous)

Sample ID: 12-0026-73

Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL	Date Prepared/By	Date Analyzed/By	DF	Qual
Phenanthrene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Phenol	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Pyrene	1000U		ug/L	1000	500	11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Fluorobiphenyl (S)	94.8		%	65.6-111		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2-Fluorophenol (S)	74.7		%	47.9-90.3		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Nitrobenzene-d5 (S)	96		%	58.5-121		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
p-Terphenyl-d14 (S)	118		%	58.9-117		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
Phenol-d5 (S)	42.5		%	33.1-51.8		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	
2,4,6-Tribromophenol (S)	93.4		%	71.9-121		11/20/2013 15:09 JH	11/20/2013 16:49 BGB	1	

Volatiles

Analysis Desc: EPA 8260B

Preparation Method: EPA 5030B

Analytical Method: EPA 8260B

1,1,1,2-Tetrachloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1,1-Trichloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1,2,2-Tetrachloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1,2-Trichloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1-Dichloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1-Dichloroethene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,1-Dichloropropene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2,3-Trichlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2,3-Trichloropropane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2,4-Trichlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2,4-Trimethylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2-Dibromo-3-chloropropane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0
1,2-Dibromoethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100	0



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990001

Date Received: 11/19/2013

Matrix: Water (Miscellaneous)

Sample ID: 12-0026-73

Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL	Date Prepared/By	Date Analyzed/By	DF	Qual
1,2-Dichlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,2-Dichloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,2-Dichloropropane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,3,5-Trimethylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,3-Dichlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,3-Dichloropropane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,4-Dichlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1-Chlorobutane	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
2,2-Dichloropropane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
2-Butanone {MEK}	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
2-Chlorotoluene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
2-Hexanone	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
2-Nitropropane	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
4-Chlorotoluene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
4-Isopropyltoluene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
4-Methyl-2-pentanone {MIBK}	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Acetone	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Acrylonitrile	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Allyl chloride	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Benzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Bromobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Bromochloromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Bromodichloromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Bromoform	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: **93990001**
Sample ID: **12-0026-73**Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL	Date Prepared/By	Date Analyzed/By	DF	Qual
Bromomethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Carbon disulfide	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Carbon tetrachloride	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Chloroacetonitrile	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Chlorobenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Chloroethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Chloroform	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Chloromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
cis-1,2-Dichloroethene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
cis-1,3-Dichloropropene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Dibromochloromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Dibromomethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Dichlorodifluoromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Ethyl ether	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Ethyl methacrylate	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Ethylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Hexachlorobutadiene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Hexachloroethane	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Isopropylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
m,p-Xylene	4000U		ug/L	4000	2000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Methacrylonitrile	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Methyl acrylate	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Methyl iodide	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Methyl methacrylate	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990001

Date Received: 11/19/2013

Matrix: Water (Miscellaneous)

Sample ID: 12-0026-73

Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL	Date Prepared/By	Date Analyzed/By	DF	Qual
Methyl tert-butyl ether {MtBE}	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Methylene chloride	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
n-Butylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
n-Propylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Naphthalene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
o-Xylene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Propionitrile	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
sec-Butylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Styrene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
tert-Butylbenzene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Tetrachloroethene {PCE}	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Tetrahydrofuran	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Toluene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
trans-1,2-Dichloroethene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
trans-1,3-Dichloropropene	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
trans-1,4-Dichloro-2-butene	20000U		ug/L	20000	10000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Trichloroethene {TCE}	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Trichlorofluoromethane	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Vinyl chloride	2000U		ug/L	2000	1000	11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
1,2-Dichloroethane-d4 (S)	100		%	90.8-109		11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
4-Bromofluorobenzene (S)	100		%	91.1-106		11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Dibromofluoromethane (S)	91.8		%	92.1-111		11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	
Toluene-d8 (S)	98.2		%	95-105		11/19/2013 00:00 JSS	11/19/2013 15:32 JSS	100 0	

Analysis Desc: EPA 415.3

Preparation Method: EPA 415.3

Analytical Method: EPA 415.3



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: **93990001**
Sample ID: **12-0026-73**Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
Total Organic Carbon {TOC}	15000		mg/L	500	250 11/23/2013 09:39 SWS	11/23/2013 09:44 SWS	100	0
Analysis Desc: EPA 7470A		Preparation Method: EPA 7470A						
		Analytical Method: EPA 7470A						
Mercury	1.4		ug/L	0.20	0.020 11/21/2013 00:00 RWF	11/21/2013 00:00 RWF	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990002
Sample ID: VOC BLANKDate Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
Volatiles								
Analysis Desc: EPA 8260B			Preparation Method: EPA 5030B					
			Analytical Method: EPA 8260B					
1,1,1,2-Tetrachloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1,1-Trichloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1,2,2-Tetrachloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1,2-Trichloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1-Dichloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1-Dichloroethene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,1-Dichloropropene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2,3-Trichlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2,3-Trichloropropane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2,4-Trichlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2,4-Trimethylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dibromo-3-chloropropane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dibromoethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dichlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dichloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dichloropropane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,3,5-Trimethylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,3-Dichlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,3-Dichloropropane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,4-Dichlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1-Chlorobutane	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
2,2-Dichloropropane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990002
Sample ID: VOC BLANKDate Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
2-Butanone {MEK}	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
2-Chlorotoluene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
2-Hexanone	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
2-Nitropropane	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
4-Chlorotoluene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
4-Isopropyltoluene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
4-Methyl-2-pentanone {MIBK}	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Acetone	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Acrylonitrile	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Allyl chloride	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Benzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Bromobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Bromochloromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Bromodichloromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Bromoform	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Bromomethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Carbon disulfide	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Carbon tetrachloride	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Chloroacetonitrile	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Chlorobenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Chloroethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Chloroform	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Chloromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
cis-1,2-Dichloroethene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: **93990002**
Sample ID: **VOC BLANK**Date Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
cis-1,3-Dichloropropene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Dibromochloromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Dibromomethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Dichlorodifluoromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Ethyl ether	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Ethyl methacrylate	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Ethylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Hexachlorobutadiene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Hexachloroethane	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Isopropylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
m,p-Xylene	4.0U		ug/L	4.0	2.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methacrylonitrile	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methyl acrylate	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methyl iodide	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methyl methacrylate	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methyl tert-butyl ether {MtBE}	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Methylene chloride	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
n-Butylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
n-Propylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Naphthalene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
o-Xylene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Propionitrile	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
sec-Butylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Styrene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	



ANALYTICAL RESULTS

Workorder: 9399 ECBC DEMIL EFFLUENTS

Lab ID: 93990002
Sample ID: VOC BLANKDate Received: 11/19/2013 Matrix: Water (Miscellaneous)
Date Collected: 11/19/2013

Parameters	Results	Uncert	Units	LOQ	MDL Date Prepared/By	Date Analyzed/By	DF	Qual
tert-Butylbenzene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Tetrachloroethene {PCE}	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Tetrahydrofuran	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Toluene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
trans-1,2-Dichloroethene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
trans-1,3-Dichloropropene	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
trans-1,4-Dichloro-2-butene	20U		ug/L	20	10 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Trichloroethene {TCE}	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Trichlorofluoromethane	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Vinyl chloride	2.0U		ug/L	2.0	1.0 11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
1,2-Dichloroethane-d4 (S)	95.7		%	90.8-109	11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
4-Bromofluorobenzene (S)	95.6		%	91.1-106	11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Dibromofluoromethane (S)	92		%	92.1-111	11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	
Toluene-d8 (S)	99.1		%	95-105	11/19/2013 00:00 JSS	11/19/2013 15:09 JSS	1	



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

QC Batch: VSV/2860 Analysis Method: EPA 8260B
QC Batch Method: EPA 5030B
Associated Lab Samples: 93990001, 93990002
METHOD BLANK: 44377

Parameter	Units	Blank Result	LOQ Qualifiers
Volatiles	None		
1,1,1,2-Tetrachloroethane	ug/L	2.0U	2.0
1,1,1-Trichloroethane	ug/L	2.0U	2.0
1,1,2,2-Tetrachloroethane	ug/L	2.0U	2.0
1,1,2-Trichloroethane	ug/L	2.0U	2.0
1,1-Dichloroethane	ug/L	2.0U	2.0
1,1-Dichloroethene	ug/L	2.0U	2.0
1,1-Dichloropropene	ug/L	2.0U	2.0
1,2,3-Trichlorobenzene	ug/L	2.0U	2.0
1,2,3-Trichloropropane	ug/L	2.0U	2.0
1,2,4-Trichlorobenzene	ug/L	2.0U	2.0
1,2,4-Trimethylbenzene	ug/L	2.0U	2.0
1,2-Dibromo-3-chloropropane	ug/L	2.0U	2.0
1,2-Dibromoethane	ug/L	2.0U	2.0
1,2-Dichlorobenzene	ug/L	2.0U	2.0
1,2-Dichloroethane	ug/L	2.0U	2.0
1,2-Dichloropropane	ug/L	2.0U	2.0
1,3,5-Trimethylbenzene	ug/L	2.0U	2.0
1,3-Dichlorobenzene	ug/L	2.0U	2.0
1,3-Dichloropropane	ug/L	2.0U	2.0
1,4-Dichlorobenzene	ug/L	2.0U	2.0
1-Chlorobutane	ug/L	20U	20
2,2-Dichloropropane	ug/L	2.0U	2.0
2-Butanone {MEK}	ug/L	20U	20
2-Chlorotoluene	ug/L	2.0U	2.0
2-Hexanone	ug/L	20U	20
2-Nitropropane	ug/L	20U	20
4-Chlorotoluene	ug/L	2.0U	2.0
4-Isopropyltoluene	ug/L	2.0U	2.0
4-Methyl-2-pentanone {MIBK}	ug/L	20U	20
Acetone	ug/L	20U	20
Acrylonitrile	ug/L	20U	20
Allyl chloride	ug/L	20U	20
Benzene	ug/L	2.0U	2.0
Bromobenzene	ug/L	2.0U	2.0
Bromochloromethane	ug/L	2.0U	2.0
Bromodichloromethane	ug/L	2.0U	2.0
Bromoform	ug/L	2.0U	2.0
Bromomethane	ug/L	2.0U	2.0
Carbon disulfide	ug/L	20U	20
Carbon tetrachloride	ug/L	2.0U	2.0
Chloroacetonitrile	ug/L	20U	20
Chlorobenzene	ug/L	2.0U	2.0
Chloroethane	ug/L	2.0U	2.0
Chloroform	ug/L	2.0U	2.0



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

METHOD BLANK: 44377

Parameter	Units	Blank Result	LOQ	Qualifiers
Chloromethane	ug/L	2.0U	2.0	
cis-1,2-Dichloroethene	ug/L	2.0U	2.0	
cis-1,3-Dichloropropene	ug/L	2.0U	2.0	
Dibromochloromethane	ug/L	2.0U	2.0	
Dibromomethane	ug/L	2.0U	2.0	
Dichlorodifluoromethane	ug/L	2.0U	2.0	
Ethyl ether	ug/L	20U	20	
Ethyl methacrylate	ug/L	20U	20	
Ethylbenzene	ug/L	2.0U	2.0	
Hexachlorobutadiene	ug/L	2.0U	2.0	
Hexachloroethane	ug/L	20U	20	
Isopropylbenzene	ug/L	2.0U	2.0	
m,p-Xylene	ug/L	4.0U	4.0	
Methacrylonitrile	ug/L	20U	20	
Methyl acrylate	ug/L	20U	20	
Methyl iodide	ug/L	20U	20	
Methyl methacrylate	ug/L	20U	20	
Methyl tert-butyl ether {MtBE}	ug/L	20U	20	
Methylene chloride	ug/L	2.0U	2.0	
n-Butylbenzene	ug/L	2.0U	2.0	
n-Propylbenzene	ug/L	2.0U	2.0	
Naphthalene	ug/L	2.0U	2.0	
o-Xylene	ug/L	2.0U	2.0	
Propionitrile	ug/L	20U	20	
sec-Butylbenzene	ug/L	2.0U	2.0	
Styrene	ug/L	2.0U	2.0	
tert-Butylbenzene	ug/L	2.0U	2.0	
Tetrachloroethene {PCE}	ug/L	2.0U	2.0	
Tetrahydrofuran	ug/L	20U	20	
Toluene	ug/L	2.0U	2.0	
trans-1,2-Dichloroethene	ug/L	2.0U	2.0	
trans-1,3-Dichloropropene	ug/L	2.0U	2.0	
trans-1,4-Dichloro-2-butene	ug/L	20U	20	
Trichloroethene {TCE}	ug/L	2.0U	2.0	
Trichlorofluoromethane	ug/L	2.0U	2.0	
Vinyl chloride	ug/L	2.0U	2.0	
1,2-Dichloroethane-d4 (S)		102	90.8-109	
4-Bromofluorobenzene (S)		96.8	91.1-106	
Dibromofluoromethane (S)		93.4	92.1-111	
Toluene-d8 (S)		98.2	95-105	

LABORATORY CONTROL SAMPLE & LCSD: 44378 44379

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	LCS Qualifiers	LCSD Qualifiers
Volatiles	None										
1,1,1,2-Tetrachloroethane	ug/L	20	20	20	99	102	85.6-130	2.99	30		
1,1,1-Trichloroethane	ug/L	20	19	19	94.6	93.8	87.1-127	0.849	30		
1,1,2,2-Tetrachloroethane	ug/L	20	18	20	90	97.7	79.9-121	8.2	30		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

LABORATORY CONTROL SAMPLE & LCSD: 44378

44379

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCS Qualifiers	LCSD Qualifiers
1,1,2-Trichloroethane	ug/L	20	19	19	92.9	96.3	85.4-120	3.59	30		
1,1-Dichloroethane	ug/L	20	18	19	91.4	94.7	82.1-125	3.55	30		
1,1-Dichloroethene	ug/L	20	19	20	94.7	99.3	77-140	4.74	30		
1,1-Dichloropropene	ug/L	20	19	19	94.6	96.2	87-129	1.68	30		
1,2,3-Trichlorobenzene	ug/L	20	19	20	96.4	99.3	83.2-117	2.96	30		
1,2,3-Trichloropropane	ug/L	20	17	19	87.2	96.8	81.8-121	10.4	30		
1,2,4-Trichlorobenzene	ug/L	20	19	20	96.3	99.9	84.2-122	3.67	30		
1,2,4-Trimethylbenzene	ug/L	20	19	20	94.3	98.5	86.3-123	4.36	30		
1,2-Dibromo-3-chloropropane	ug/L	20	18	18	88.2	90.2	70.7-128	2.24	30		
1,2-Dibromoethane	ug/L	20	19	20	94.6	98.9	87.3-123	4.44	30		
1,2-Dichlorobenzene	ug/L	20	19	19	93.3	95.5	81.2-114	2.33	30		
1,2-Dichloroethane	ug/L	20	18	19	89.9	92.6	76.8-134	2.96	30		
1,2-Dichloropropane	ug/L	20	19	20	92.9	98.4	85.5-118	5.75	30		
1,3,5-Trimethylbenzene	ug/L	20	19	20	96.4	98.5	84-124	2.15	30		
1,3-Dichlorobenzene	ug/L	20	19	19	93.8	97	80.6-114	3.35	30		
1,3-Dichloropropane	ug/L	20	19	19	93.9	94.4	86.6-121	0.531	30		
1,4-Dichlorobenzene	ug/L	20	18	19	90.1	96.3	84.7-113	6.65	30		
1-Chlorobutane	ug/L	100	92	94	92.1	94.4	73.2-121	2.47	30		
2,2-Dichloropropane	ug/L	20	20	20	102	101	69.1-143	0.985	30		
2-Butanone {MEK}	ug/L	100	83	90	82.9	90.2	43.6-145	8.43	30		
2-Chlorotoluene	ug/L	20	19	20	94.8	97.5	79.4-117	2.81	30		
2-Hexanone	ug/L	100	90	93	90.3	93.3	62.3-124	3.27	30		
2-Nitropropane	ug/L	100	110	100	107	104	49.7-146	2.84	30		
4-Chlorotoluene	ug/L	20	19	20	94.9	98.1	81.3-115	3.32	30		
4-Isopropyltoluene	ug/L	20	19	20	96.9	99.3	81.1-118	2.45	30		
4-Methyl-2-pentanone {MIBK}	ug/L	100	88	94	88.2	94.3	76-120	6.68	30		
Acetone	ug/L	100	64	76	63.9	76.4	21.6-168	17.8	30		
Acrylonitrile	ug/L	100	84	95	83.7	94.7	71.8-122	12.3	30		
Allyl chloride	ug/L	100	96	100	96.3	100	69.2-127	3.77	30		
Benzene	ug/L	20	19	19	94	97.2	84.3-120	3.35	30		
Bromobenzene	ug/L	20	19	20	94	98.4	86.4-116	4.57	30		
Bromochloromethane	ug/L	20	19	20	93.2	99.8	82.7-127	6.84	30		
Bromodichloromethane	ug/L	20	18	19	90.3	94.6	84.4-126	4.65	30		
Bromoform	ug/L	20	18	18	87.8	91.6	71.8-132	4.24	30		
Bromomethane	ug/L	20	19	19	94.5	97.4	57-139	3.02	30		
Carbon disulfide	ug/L	100	92	97	91.8	96.6	46.3-139	5.1	30		
Carbon tetrachloride	ug/L	20	18	19	91.8	94.4	80.5-132	2.79	30		
Chloroacetonitrile	ug/L	100	95	95	95.4	95.4	61.8-138	0	30		
Chlorobenzene	ug/L	20	19	20	97	97.6	82.8-115	0.617	30		
Chloroethane	ug/L	20	17	19	84.8	93.5	67.1-119	9.76	30		
Chloroform	ug/L	20	18	19	89	93.7	82-123	5.15	30		
Chloromethane	ug/L	20	15	16	73.9	77.7	63.2-112	5.01	30		
cis-1,2-Dichloroethene	ug/L	20	19	20	97	101	44.2-175	4.04	30		
cis-1,3-Dichloropropene	ug/L	20	19	20	92.6	99.2	81-119	6.88	30		
Dibromochloromethane	ug/L	20	18	18	89.5	92.4	78.8-126	3.19	30		
Dibromomethane	ug/L	20	19	19	92.5	97	85.7-121	4.75	30		
Dichlorodifluoromethane	ug/L	20	17	16	85.4	79.5	40.1-124	7.16	30		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

LABORATORY CONTROL SAMPLE & LCSD: 44378

44379

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCS Qualifiers	LCSD Qualifiers
Ethyl ether	ug/L	100	88	93	87.5	93.2	71.2-131	6.31	30		
Ethyl methacrylate	ug/L	100	96	99	96	99	79.6-123	3.08	30		
Ethylbenzene	ug/L	20	20	20	98.8	99.5	86.8-121	0.706	30		
Hexachlorobutadiene	ug/L	20	20	21	98	104	81.7-128	5.94	30		
Hexachloroethane	ug/L	100	91	92	91.3	92.3	70.5-119	1.09	30		
Isopropylbenzene	ug/L	20	20	20	99.4	102	75-111	2.58	30		
m,p-Xylene	ug/L	40	40	40	100	101	86.9-118	0.995	30		
Methacrylonitrile	ug/L	100	93	99	93	98.9	75.2-119	6.15	30		
Methyl acrylate	ug/L	100	92	94	91.6	94.3	74.7-126	2.9	30		
Methyl iodide	ug/L	100	93	98	92.6	97.9	58.9-140	5.56	30		
Methyl methacrylate	ug/L	100	92	98	92.2	98	78.3-122	6.1	30		
Methyl tert-butyl ether (MtBE)	ug/L	100	87	93	87.1	93.2	75.7-126	6.77	30		
Methylene chloride	ug/L	20	19	20	94.3	101	80.7-125	6.86	30		
n-Butylbenzene	ug/L	20	20	20	97.6	99.6	82.8-126	2.03	30		
n-Propylbenzene	ug/L	20	19	20	96.6	99.5	77.1-121	2.96	30		
Naphthalene	ug/L	20	19	20	95	102	79.7-124	7.11	30		
o-Xylene	ug/L	20	20	20	102	100	84.6-116	1.98	30		
Propionitrile	ug/L	100	84	89	83.8	88.6	53.4-139	5.57	30		
sec-Butylbenzene	ug/L	20	20	20	98	99.1	79.6-121	1.12	30		
Styrene	ug/L	20	20	20	98.9	102	87.6-119	3.09	30		
tert-Butylbenzene	ug/L	20	19	20	95.5	101	79.2-122	5.6	30		
Tetrachloroethene {PCE}	ug/L	20	21	20	103	99.5	76.8-135	3.46	30		
Tetrahydrofuran	ug/L	100	80	88	79.5	87.8	69-124	9.92	30		
Toluene	ug/L	20	19	20	94.6	99.7	87.2-119	5.25	30		
trans-1,2-Dichloroethene	ug/L	20	19	19	95.7	96	86.4-126	0.313	30		
trans-1,3-Dichloropropene	ug/L	20	18	19	91.6	95.3	71-122	3.96	30		
trans-1,4-Dichloro-2-butene	ug/L	100	86	92	85.8	92	66.1-114	6.97	30		
Trichloroethene {TCE}	ug/L	20	19	20	96.1	98.4	85.7-124	2.37	30		
Trichlorofluoromethane	ug/L	20	18	19	92	95.4	57.9-134	3.63	30		
Vinyl chloride	ug/L	20	18	19	91.8	92.6	79.8-133	0.868	30		
1,2-Dichloroethane-d4 (S)					97.8	102	90.8-109	4.2	30		
4-Bromofluorobenzene (S)					98.4	101	91.1-106	2.61	30		
Dibromofluoromethane (S)					99.1	101	92.1-111	1.9	30		
Toluene-d8 (S)					99.5	102	95-105	2.48	30		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

44381

Original: 44380

[Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max MS RPD	MS Qualifier	MSD Qualifier
Volatiles	None											
1,1,1,2-Tetrachloroethane	ug/L	0	20000	18000	19000	92.1	94.9	85.6-130	2.99	30		
1,1,1-Trichloroethane	ug/L	0	20000	17000	17000	83.3**	84.3**	87.1-127	1.19	30		
1,1,2,2-Tetrachloroethane	ug/L	0	20000	17000	18000	86	91.2	79.9-121	5.87	30		
1,1,2-Trichloroethane	ug/L	0	20000	17000	18000	86.5	91.6	85.4-120	5.73	30		
1,1-Dichloroethane	ug/L	0	20000	17000	17000	84.7	86.8	82.1-125	2.45	30		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:				44381	Original: 44380		[Spiked HSN = 93990001]				
Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	MS RPD Qualifier	MSD Qualifier
1,1-Dichloroethene	ug/L	0	20000	17000	18000	85.6	90.8	77-140	5.9	30	
1,1-Dichloropropene	ug/L	0	20000	18000	17000	90.8	87.2	87-129	4.04	30	
1,2,3-Trichlorobenzene	ug/L	0	20000	18000	18000	90.9	89.3	83.2-117	1.78	30	
1,2,3-Trichloropropane	ug/L	0	20000	18000	17000	87.8	86.1	81.8-121	1.96	30	
1,2,4-Trichlorobenzene	ug/L	0	20000	18000	18000	91.3	89	84.2-122	2.55	30	
1,2,4-Trimethylbenzene	ug/L	0	20000	18000	18000	92.1	88.8	86.3-123	3.65	30	
1,2-Dibromo-3-chloropropane	ug/L	0	20000	16000	16000	78.5	80.2	70.7-128	2.14	30	
1,2-Dibromoethane	ug/L	0	20000	17000	18000	86.5**	90.5	87.3-123	4.52	30	
1,2-Dichlorobenzene	ug/L	0	20000	17000	18000	87.2	88	81.2-114	0.91	30	
1,2-Dichloroethane	ug/L	0	20000	16000	17000	81.8	83.6	76.8-134	2.18	30	
1,2-Dichloropropane	ug/L	0	20000	17000	18000	86.7	92	85.5-118	5.93	30	
1,3,5-Trimethylbenzene	ug/L	0	20000	18000	18000	91.8	91.8	84-124	0	30	
1,3-Dichlorobenzene	ug/L	0	20000	18000	18000	90.4	88.2	80.6-114	2.46	30	
1,3-Dichloropropane	ug/L	0	20000	18000	17000	88	87.4	86.6-121	0.68	30	
1,4-Dichlorobenzene	ug/L	0	20000	17000	18000	87	87.8	84.7-113	0.91	30	
1-Chlorobutane	ug/L	0	100000	95000	96000	95.3	95.6	73.2-121	0.31	30	
2,2-Dichloropropane	ug/L	0	20000	18000	18000	88.4	89.6	69.1-143	1.35	30	
2-Butanone {MEK}	ug/L	0	100000	95000	99000	94.5	99.4	43.6-145	5.05	30	
2-Chlorotoluene	ug/L	0	20000	18000	18000	90.7	90.7	79.4-117	0	30	
2-Hexanone	ug/L	0	100000	98000	100000	98.2	101	62.3-124	2.81	30	
2-Nitropropane	ug/L	0	100000	110000	110000	107	110	49.7-146	2.76	30	
4-Chlorotoluene	ug/L	0	20000	18000	18000	91.4	91.4	81.3-115	0	30	
4-Isopropyltoluene	ug/L	0	20000	18000	18000	90.7	89.7	81.1-118	1.11	30	
4-Methyl-2-pentanone {MIBK}	ug/L	0	100000	90000	95000	89.5	95.3	76-120	6.28	30	
Acetone	ug/L	0	100000	89000	110000	89.3	105	21.6-168	16.2	30	
Acrylonitrile	ug/L	0	100000	81000	95000	81.2	95.1	71.8-122	15.8	30	
Allyl chloride	ug/L	0	100000	99000	100000	99.1	101	69.2-127	1.9	30	
Benzene	ug/L	0	20000	18000	18000	88.1	89.8	84.3-120	1.91	30	
Bromobenzene	ug/L	0	20000	18000	18000	91.6	90.5	86.4-116	1.21	30	
Bromochloromethane	ug/L	0	20000	17000	18000	86.4	91.6	82.7-127	5.84	30	
Bromodichloromethane	ug/L	0	20000	17000	18000	83.9**	87.6	84.4-126	4.31	30	
Bromoform	ug/L	0	20000	16000	18000	81.6	89.1	71.8-132	8.79	30	
Bromomethane	ug/L	0	20000	19000	20000	93.4	99	57-139	5.82	30	
Carbon disulfide	ug/L	0	100000	92000	100000	92	99.9	46.3-139	8.23	30	
Carbon tetrachloride	ug/L	0	20000	17000	17000	84	83.9	80.5-132	0.11	30	
Chloroacetonitrile	ug/L	20000	100000	100000	110000	81	87.6	61.8-138	7.83	30	
Chlorobenzene	ug/L	0	20000	18000	19000	92	93	82.8-115	1.08	30	
Chloroethane	ug/L	0	20000	17000	18000	86.5	87.6	67.1-119	1.26	30	
Chloroform	ug/L	0	20000	17000	18000	87.2	87.7	82-123	0.57	30	



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:				44381	Original: 44380		[Spiked HSN = 93990001]				
Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max RPD	MS RPD Qualifier	MSD RPD Qualifier
Chloromethane	ug/L	0	20000	14000	17000	72.2	83	63.2-112	13.9	30	
cis-1,2-Dichloroethene	ug/L	0	20000	18000	18000	88.7	91.4	44.2-175	3	30	
cis-1,3-Dichloropropene	ug/L	0	20000	18000	18000	88.9	91.1	81-119	2.44	30	
Dibromochloromethane	ug/L	0	20000	17000	17000	83.5	84.7	78.8-126	1.43	30	
Dibromomethane	ug/L	0	20000	18000	18000	89.9	91.4	85.7-121	1.65	30	
Dichlorodifluoromethane	ug/L	0	20000	15000	17000	76.3	82.5	40.1-124	7.81	30	
Ethyl ether	ug/L	0	100000	85000	95000	85	95.3	71.2-131	11.4	30	
Ethyl methacrylate	ug/L	0	100000	95000	100000	94.6	100	79.6-123	5.55	30	
Ethylbenzene	ug/L	0	20000	18000	18000	89.7	90.5	86.8-121	0.88	30	
Hexachlorobutadiene	ug/L	0	20000	18000	17000	89.2	87.3	81.7-128	2.15	30	
Hexachloroethane	ug/L	0	100000	93000	93000	93	92.5	70.5-119	0.53	30	
Isopropylbenzene	ug/L	0	20000	19000	19000	93.8	92.7	75-111	1.18	30	
m,p-Xylene	ug/L	0	40000	37000	36000	92.1	90.6	86.9-118	1.64	30	
Methacrylonitrile	ug/L	0	100000	94000	98000	93.8	98.4	75.2-119	4.79	30	
Methyl acrylate	ug/L	0	100000	93000	97000	92.5	97.4	74.7-126	5.16	30	
Methyl iodide	ug/L	0	100000	92000	99000	92.1	98.8	58.9-140	7.02	30	
Methyl methacrylate	ug/L	0	100000	93000	99000	93.4	99.2	78.3-122	6.02	30	
Methyl tert-butyl ether {MtBE}	ug/L	0	100000	83000	91000	82.7	91	75.7-126	9.56	30	
Methylene chloride	ug/L	0	20000	17000	19000	84.7	96	80.7-125	12.5	30	
n-Butylbenzene	ug/L	0	20000	19000	18000	93	89.7	82.8-126	3.61	30	
n-Propylbenzene	ug/L	0	20000	19000	18000	94.2	92.2	77.1-121	2.15	30	
Naphthalene	ug/L	0	20000	18000	19000	90.1	93.1	79.7-124	3.28	30	
o-Xylene	ug/L	0	20000	18000	19000	90.8	95.5	84.6-116	5.05	30	
Propionitrile	ug/L	0	100000	85000	92000	85.1	92.1	53.4-139	7.9	30	
sec-Butylbenzene	ug/L	0	20000	19000	18000	94.4	91	79.6-121	3.67	30	
Styrene	ug/L	0	20000	18000	19000	91.3	93.8	87.6-119	2.7	30	
tert-Butylbenzene	ug/L	0	20000	18000	18000	91.7	89.9	79.2-122	1.98	30	
Tetrachloroethene {PCE}	ug/L	0	20000	19000	19000	92.8	93.5	76.8-135	0.75	30	
Tetrahydrofuran	ug/L	0	100000	85000	97000	84.7	96.8	69-124	13.3	30	
Toluene	ug/L	0	20000	18000	18000	90.2	90.3	87.2-119	0.11	30	
trans-1,2-Dichloroethene	ug/L	0	20000	17000	18000	86.3**	88.7	86.4-126	2.74	30	
trans-1,3-Dichloropropene	ug/L	0	20000	17000	18000	86.3	88.9	71-122	2.97	30	
trans-1,4-Dichloro-2-butene	ug/L	0	100000	92000	90000	92.1	89.5	66.1-114	2.86	30	
Trichloroethene {TCE}	ug/L	0	20000	19000	18000	92.7	90.3	85.7-124	2.62	30	
Trichlorofluoromethane	ug/L	0	20000	18000	19000	92.4	96.4	57.9-134	4.24	30	
Vinyl chloride	ug/L	0	20000	17000	18000	84.6	91.5	79.8-133	7.84	30	
1,2-Dichloroethane-d4 (S)	%	100				98	90.8	90.8-109	7.63	30	
4-Bromofluorobenzene (S)	%	100				102	99	91.1-106	2.99	30	
Dibromofluoromethane (S)	%	91.8				101	98.7	92.1-111	2.3	30	
Toluene-d8 (S)	%	98.2				102	104	95-105	1.94	30	



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44381 Original: 44380 [Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit RPD	Max MS RPD	MSD Qualifier
-----------	-------	--------------------	----------------	--------------	---------------	-------------	--------------	--------------------	---------------	------------------



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

QC Batch: VSV/2864 Analysis Method: EPA 8270C
QC Batch Method: EPA 3510C
Associated Lab Samples: 93990001
METHOD BLANK: 44413

Parameter	Units	Blank Result	LOQ Qualifiers
Semivolatiles	None		
1,2,4-Trichlorobenzene	ug/L	10U	10
1,2-Dichlorobenzene	ug/L	10U	10
1,3-Dichlorobenzene	ug/L	10U	10
1,4-Dichlorobenzene	ug/L	10U	10
2,2'-oxybis(1-Chloropropane)	ug/L	10U	10
2,4,5-Trichlorophenol	ug/L	10U	10
2,4,6-Trichlorophenol	ug/L	10U	10
2,4-Dichlorophenol	ug/L	10U	10
2,4-Dimethylphenol	ug/L	10U	10
2,4-Dinitrophenol	ug/L	20U	20
2,4-Dinitrotoluene	ug/L	10U	10
2,6-Dinitrotoluene	ug/L	10U	10
2-Chloronaphthalene	ug/L	10U	10
2-Chlorophenol	ug/L	10U	10
2-Methyl-4,6-dinitrophenol	ug/L	10U	10
2-Methylnaphthalene	ug/L	10U	10
2-Methylphenol {o-Cresol}	ug/L	10U	10
2-Nitroaniline	ug/L	10U	10
2-Nitrophenol	ug/L	10U	10
3-Nitroaniline	ug/L	10U	10
4-Chloro-3-methylphenol	ug/L	10U	10
4-Chloroaniline	ug/L	10U	10
4-Nitroaniline	ug/L	10U	10
4-Nitrophenol	ug/L	10U	10
Acenaphthene	ug/L	10U	10
Acenaphthylene	ug/L	10U	10
Anthracene	ug/L	10U	10
Benzo[a]pyrene	ug/L	10U	10
Benzo[b]fluoranthene	ug/L	10U	10
Benzo[g,h,i]perylene	ug/L	10U	10
Benzo[k]fluoranthene	ug/L	10U	10
Benzyl alcohol	ug/L	10U	10
Benz[a]anthracene	ug/L	10U	10
Bis(2-chloroethoxy)methane	ug/L	10U	10
Bis(2-chloroethyl)ether	ug/L	10U	10
Butylbenzylphthalate	ug/L	10U	10
Chrysene	ug/L	10U	10
Di(2-ethylhexyl)phthalate	ug/L	10U	10
Di-n-butylphthalate	ug/L	10U	10
Di-n-octylphthalate	ug/L	10U	10
Dibenzofuran	ug/L	10U	10
Dibenz[a,h]anthracene	ug/L	10U	10
Diethylphthalate	ug/L	10U	10
Dimethylphthalate	ug/L	10U	10



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

METHOD BLANK: 44413

Parameter	Units	Blank Result	LOQ Qualifiers
Fluoranthene	ug/L	10U	10
Fluorene	ug/L	10U	10
Hexachlorobenzene	ug/L	10U	10
Hexachlorobutadiene	ug/L	10U	10
Hexachlorocyclopentadiene	ug/L	10U	10
Hexachloroethane	ug/L	10U	10
Indeno[1,2,3-cd]pyrene	ug/L	10U	10
Isophorone	ug/L	10U	10
m,p-Methylphenol {m,p-Cresol}	ug/L	10U	10
N-Nitrosodimethylamine	ug/L	10U	10
N-Nitrosodiphenylamine	ug/L	10U	10
N-Nitrosodipropylamine	ug/L	10U	10
Naphthalene	ug/L	10U	10
Nitrobenzene	ug/L	10U	10
p-Bromophenyl phenyl ether	ug/L	10U	10
p-Chlorophenyl phenyl ether	ug/L	10U	10
Pentachlorophenol	ug/L	10U	10
Phenanthrene	ug/L	10U	10
Phenol	ug/L	10U	10
Pyrene	ug/L	10U	10
2-Fluorobiphenyl (S)		90.2	65.6-111
2-Fluorophenol (S)		71.7	47.9-90.3
Nitrobenzene-d5 (S)		94	58.5-121
p-Terphenyl-d14 (S)		109	58.9-117
Phenol-d5 (S)		39.9	33.1-51.8
2,4,6-Tribromophenol (S)		84.7	71.9-121

LABORATORY CONTROL SAMPLE & LCSD: 44414 44415

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	LCS Qualifiers	LCSD Qualifiers
Semivolatiles	None										
1,2,4-Trichlorobenzene	ug/L	100	83	83	82.8	82.9	53.9-121	0.121	30		
1,2-Dichlorobenzene	ug/L	100	75	73	74.9	73.4	62.8-112	2.02	30		
1,3-Dichlorobenzene	ug/L	100	74	71	73.7	71.1	60.8-111	3.59	30		
1,4-Dichlorobenzene	ug/L	100	74	72	74.1	71.7	63.2-108	3.29	30		
2,2'-oxybis(1-Chloropropane)	ug/L	100	92	94	92.4	93.9	66.5-120	1.61	30		
2,4,5-Trichlorophenol	ug/L	100	95	96	94.5	96	71.5-123	1.57	30		
2,4,6-Trichlorophenol	ug/L	100	97	99	97.3	98.9	69.7-124	1.63	30		
2,4-Dichlorophenol	ug/L	100	94	96	93.5	95.7	59.4-126	2.33	30		
2,4-Dimethylphenol	ug/L	100	89	90	88.8	90.4	63.1-128	1.79	30		
2,4-Dinitrophenol	ug/L	100	84	89	84.4	89.3	65.5-120	5.64	30		
2,4-Dinitrotoluene	ug/L	100	93	95	92.8	95.5	77.4-116	2.87	30		
2,6-Dinitrotoluene	ug/L	100	96	99	96.2	98.9	77.3-112	2.77	30		
2-Chloronaphthalene	ug/L	100	89	91	89.4	91	74.1-108	1.77	30		
2-Chlorophenol	ug/L	100	88	89	87.6	89.5	70.8-115	2.15	30		
2-Methyl-4,6-dinitrophenol	ug/L	100	84	88	83.9	87.5	77.9-114	4.2	30		
2-Methylnaphthalene	ug/L	100	86	87	85.9	87.5	52.2-142	1.85	30		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

LABORATORY CONTROL SAMPLE & LCSD: 44414

44415

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCS Qualifiers	LCSD Qualifiers
2-Methylphenol {o-Cresol}	ug/L	100	83	84	82.8	84	72.5-103	1.44	30		
2-Nitroaniline	ug/L	100	96	98	95.8	97.5	77.6-135	1.76	30		
2-Nitrophenol	ug/L	100	92	95	91.9	95.2	60.2-117	3.53	30		
3-Nitroaniline	ug/L	100	81	88	81.4	88.4	29.6-178	8.24	30		
4-Chloro-3-methylphenol	ug/L	100	92	94	91.9	93.5	60.7-124	1.73	30		
4-Chloroaniline	ug/L	100	83	87	83	87.2	36.8-154	4.94	30		
4-Nitroaniline	ug/L	100	72	85	71.6	85.2	52.6-139	17.3	30		
4-Nitrophenol	ug/L	100	41	43	40.7	42.8	29.9-58.7	5.03	30		
Acenaphthene	ug/L	100	91	94	91.2	93.6	74.5-117	2.6	30		
Acenaphthylene	ug/L	100	95	98	94.7	97.8	77.1-113	3.22	30		
Anthracene	ug/L	100	92	96	91.8	95.8	75.3-120	4.26	30		
Benzo[a]pyrene	ug/L	100	89	94	89.4	93.7	73.9-119	4.7	30		
Benzo[b]fluoranthene	ug/L	100	94	96	94.2	95.7	76.2-122	1.58	30		
Benzo[g,h,i]perylene	ug/L	100	81	87	80.7	86.5	69.1-129	6.94	30		
Benzo[k]fluoranthene	ug/L	100	95	100	95	102	66.6-131	7.11	30	1	1
Benzyl alcohol	ug/L	100	78	80	77.7	80.1	69.6-113	3.04	30		
Benz[a]anthracene	ug/L	100	100	110	100	105	74.2-130	4.88	30		
Bis(2-chloroethoxy)methane	ug/L	100	92	95	92.4	95.4	62.6-118	3.19	30		
Bis(2-chloroethyl)ether	ug/L	100	88	91	87.9	90.6	77.5-109	3.03	30		
Butylbenzylphthalate	ug/L	100	98	99	98.2	98.7	63.6-117	0.508	30		
Chrysene	ug/L	100	90	93	90.2	92.7	80.7-116	2.73	30		
Di(2-ethylhexyl)phthalate	ug/L	100	100	100	102	104	63.9-124	1.94	30		
Di-n-butylphthalate	ug/L	100	93	96	93.1	95.5	72-122	2.55	30		
Di-n-octylphthalate	ug/L	100	110	110	105	107	53.8-123	1.89	30		
Dibenzofuran	ug/L	100	92	95	92	94.9	71.9-134	3.1	30		
Dibenz[a,h]anthracene	ug/L	100	72	78	72	78.3	50.7-141	8.38	30		
Diethylphthalate	ug/L	100	97	99	96.6	99.1	71.5-129	2.55	30		
Dimethylphthalate	ug/L	100	85	86	85	85.7	52.3-120	0.82	30		
Fluoranthene	ug/L	100	93	96	92.6	96.3	73.5-125	3.92	30		
Fluorene	ug/L	100	94	97	94.5	96.8	74.1-119	2.4	30		
Hexachlorobenzene	ug/L	100	93	96	92.7	96.3	70.5-120	3.81	30		
Hexachlorobutadiene	ug/L	100	80	76	79.8	75.6	49.1-127	5.41	30		
Hexachlorocyclopentadiene	ug/L	100	81	82	81.4	81.6	38.6-132	0.245	30		
Hexachloroethane	ug/L	100	74	69	73.6	68.6	60.4-112	7.03	30		
Indeno[1,2,3-cd]pyrene	ug/L	100	91	99	91.3	99.3	68.6-133	8.39	30		
Isophorone	ug/L	100	88	90	87.9	90	56.7-113	2.36	30		
m,p-Methylphenol {m,p-Cresol}	ug/L	200	150	150	75	76.4	61.6-92.3	1.85	30		
N-Nitrosodimethylamine	ug/L	100	63	66	63	65.7	45.9-83.8	4.2	30		
N-Nitrosodiphenylamine	ug/L	100	92	97	91.7	97.3	68.3-134	5.93	30		
N-Nitrosodipropylamine	ug/L	100	92	95	92.2	95.2	73-128	3.2	30		
Naphthalene	ug/L	100	85	88	85.5	88.1	58.6-117	3	30		
Nitrobenzene	ug/L	100	90	93	89.8	92.7	55.6-122	3.18	30		
p-Bromophenyl phenyl ether	ug/L	100	93	96	93.1	95.8	73-116	2.86	30		
p-Chlorophenyl phenyl ether	ug/L	100	100	100	99.7	102	71.8-119	2.28	30		
Pentachlorophenol	ug/L	100	80	82	80.2	81.7	61.5-133	1.85	30		
Phenanthrene	ug/L	100	91	93	90.8	93.4	73.1-118	2.82	30		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

LABORATORY CONTROL SAMPLE & LCSD: 44414

44415

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCS Qualifiers	LCSD Qualifiers
Phenol	ug/L	100	41	42	41.4	42.5	34.2-54.3	2.62	30		
Pyrene	ug/L	100	100	100	104	105	72.2-112	0.957	30		
2-Fluorobiphenyl (S)					95.1	93.6	65.6-111	1.59			
2-Fluorophenol (S)					69.7	71.3	47.9-90.3	2.27			
Nitrobenzene-d5 (S)					95	95.5	58.5-121	0.525			
p-Terphenyl-d14 (S)					98.3	98.5	58.9-117	0.203			
Phenol-d5 (S)					39.6	40.8	33.1-51.8	2.99			
2,4,6-Tribromophenol (S)					91.6	94.1	71.9-121	2.69			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:

44417

Original: 44416

[Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max MS RPD	MS Qualifier	MSD Qualifier
Semivolatiles	None											
1,2,4-Trichlorobenzene	ug/L	0	10000	8600	9000	86	89.8	53.9-121	4.32	30		
1,2-Dichlorobenzene	ug/L	0	10000	7700	7700	77.2	76.7	62.8-112	0.65	30		
1,3-Dichlorobenzene	ug/L	0	10000	7600	7500	75.9	75	60.8-111	1.19	30		
1,4-Dichlorobenzene	ug/L	0	10000	7600	7500	76.5	75.2	63.2-108	1.71	30		
2,2'-oxybis(1-Chloropropane)	ug/L	0	10000	9100	9200	91.2	92.5	66.5-120	1.42	30		
2,4,5-Trichlorophenol	ug/L	0	10000	9300	9700	92.9	96.9	71.5-123	4.21	30		
2,4,6-Trichlorophenol	ug/L	0	10000	9500	9900	94.7	98.8	69.7-124	4.24	30		
2,4-Dichlorophenol	ug/L	0	10000	9300	9700	92.8	96.7	59.4-126	4.12	30		
2,4-Dimethylphenol	ug/L	0	10000	8600	8800	85.8	87.7	63.1-128	2.19	30		
2,4-Dinitrophenol	ug/L	0	10000	8600	9200	85.8	92.2	65.5-120	7.19	30		
2,4-Dinitrotoluene	ug/L	0	10000	9300	9800	93.3	97.9	77.4-116	4.81	30		
2,6-Dinitrotoluene	ug/L	0	10000	9600	10000	95.7	100	77.3-112	4.39	30		
2-Chloronaphthalene	ug/L	0	10000	9100	9500	90.7	95.5	74.1-108	5.16	30		
2-Chlorophenol	ug/L	0	10000	8600	8900	86.4	89.4	70.8-115	3.41	30		
2-Methyl-4,6-dinitrophenol	ug/L	0	10000	8400	8700	83.5	87.4	77.9-114	4.56	30		
2-Methylnaphthalene	ug/L	0	10000	8900	9300	89.1	93.2	52.2-142	4.5	30		
2-Methylphenol {o-Cresol}	ug/L	0	10000	8200	8300	81.6	83	72.5-103	1.7	30		
2-Nitroaniline	ug/L	0	10000	9400	9800	94.1	97.8	77.6-135	3.86	30		
2-Nitrophenol	ug/L	0	10000	9200	9600	91.5	96.1	60.2-117	4.9	30		
3-Nitroaniline	ug/L	0	10000	8300	9000	82.7	89.7	29.6-178	8.12	30		
4-Chloro-3-methylphenol	ug/L	0	10000	9100	9400	90.9	94.3	60.7-124	3.67	30		
4-Chloroaniline	ug/L	0	10000	8300	8900	83.1	88.9	36.8-154	6.74	30		
4-Nitroaniline	ug/L	0	10000	7900	8800	79.2	88.3	52.6-139	10.9	30		
4-Nitrophenol	ug/L	0	10000	4100	4300	40.7	43.2	29.9-58	5.96	30		
Acenaphthene	ug/L	0	10000	9400	9700	93.7	97.2	74.5-117	3.67	30		
Acenaphthylene	ug/L	0	10000	9700	10000	96.5	101	77.1-113	4.56	30		
Anthracene	ug/L	0	10000	9300	9700	92.6	96.9	75.3-120	4.54	30		

**QUALITY CONTROL DATA**

Workorder: 9399 ECBC DEMIL EFFLUENTS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44417 Original: 44416 [Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit RPD	Max MS RPD	MSD Qualifier
Benzo[a]pyrene	ug/L	0	10000	9000	9400	89.8	93.6	73.9-119 4.14	30	
Benzo[b]fluoranthene	ug/L	0	10000	9600	9500	95.9	94.7	76.2-122 1.26	30	
Benzo[g,h,i]perylene	ug/L	0	10000	7900	8600	79	86.2	69.1-129 8.72	30	
Benzo[k]fluoranthene	ug/L	0	10000	9600	11000	95.5	107	66.6-131 11.4	30	1
Benzyl alcohol	ug/L	0	10000	7700	8000	77.4	80.3	69.6-113 3.68	30	
Benz[a]anthracene	ug/L	0	10000	10000	10000	100	104	74.2-130 3.92	30	
Bis(2-chloroethoxy)methane	ug/L	0	10000	9200	9600	92.3	95.8	62.6-118 3.72	30	
Bis(2-chloroethyl)ether	ug/L	0	10000	8700	9000	86.6	89.7	77.5-109 3.52	30	
Butylbenzylphthalate	ug/L	0	10000	9900	9800	98.8	98	63.6-117 0.81	30	
Chrysene	ug/L	0	10000	8900	9400	89.2	94.1	80.7-116 5.35	30	
Di(2-ethylhexyl)phthalate	ug/L	0	10000	10000	10000	102	102	63.9-124 0	30	
Di-n-butylphthalate	ug/L	0	10000	9300	9700	93.3	96.8	72-122 3.68	30	
Di-n-octylphthalate	ug/L	0	10000	11000	11000	107	107	53.8-123 0	30	
Dibenzofuran	ug/L	0	10000	9400	9900	93.7	98.6	71.9-134 5.1	30	
Dibenz[a,h]anthracene	ug/L	0	10000	7200	7800	72	77.6	50.7-141 7.49	30	
Diethylphthalate	ug/L	0	10000	9900	10000	98.9	103	71.5-129 4.06	30	
Dimethylphthalate	ug/L	0	10000	9000	9400	89.6	94.2	52.3-120 5.01	30	
Fluoranthene	ug/L	0	10000	9200	9800	92.1	97.6	73.5-125 5.8	30	
Fluorene	ug/L	0	10000	9600	10000	96.1	100	74.1-119 3.98	30	
Hexachlorobenzene	ug/L	0	10000	9300	9800	93	97.7	70.5-120 4.93	30	
Hexachlorobutadiene	ug/L	0	10000	8300	8500	83.1	85.1	49.1-127 2.38	30	
Hexachlorocyclopentadiene	ug/L	0	10000	8300	9000	83.3	90.2	38.6-132 7.95	30	
Hexachloroethane	ug/L	0	10000	7600	7400	76.3	74.2	60.4-112 2.79	30	
Indeno[1,2,3-cd]pyrene	ug/L	0	10000	9100	9800	91.2	98.5	68.6-133 7.7	30	
Isophorone	ug/L	0	10000	8700	9000	86.8	89.8	56.7-113 3.4	30	
m,p-Methylphenol {m,p-Cresol}	ug/L	0	20000	15000	15000	74.8	76.3	61.6-92. 1.99	30	
N-Nitrosodimethylamine	ug/L	0	10000	6200	6500	61.8	65.2	45.9-83. 5.35	30	
N-Nitrosodiphenylamine	ug/L	0	10000	9500	9800	95	98.5	68.3-134 3.62	30	
N-Nitrosodipropylamine	ug/L	0	10000	9300	9500	92.5	94.8	73-128 2.46	30	
Naphthalene	ug/L	0	10000	8800	9100	88.3	91.5	58.6-117 3.56	30	
Nitrobenzene	ug/L	0	10000	8900	9200	89.2	92.1	55.6-122 3.2	30	
p-Bromophenyl phenyl ether	ug/L	0	10000	9300	9800	92.9	98	73-116 5.34	30	
p-Chlorophenyl phenyl ether	ug/L	0	10000	10000	11000	101	106	71.8-119 4.83	30	
Pentachlorophenol	ug/L	0	10000	8000	8400	79.8	83.9	61.5-133 5.01	30	
Phenanthrene	ug/L	0	10000	9100	9500	91.1	95.3	73.1-118 4.51	30	
Phenol	ug/L	0	10000	4100	4200	41.2	42	34.2-54. 1.92	30	
Pyrene	ug/L	0	10000	10000	10000	103	103	72.2-112 0	30	
2-Fluorobiphenyl (S)	%	94.8				90.2	92.9	65.6-111 2.95		
2-Fluorophenol (S)	%	74.7				69.2	70	47.9-90. 1.15		



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44417 Original: 44416 [Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit RPD	Max MS RPD	MSD Qualifier
Nitrobenzene-d5 (S)	%	96				93.3	95.1	58.5-121	1.91	
p-Terphenyl-d14 (S)	%	118				98.3	97.7	58.9-117	0.61	
Phenol-d5 (S)	%	42.5				40.1	39.9	33.1-51.	0.5	
2,4,6-Tribromophenol (S)	%	93.4				92.9	95.2	71.9-121	2.45	



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

QC Batch: MET/6073 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.2 Prep
Associated Lab Samples: 93990001
METHOD BLANK: 44442

Parameter	Units	Blank Result	LOQ Qualifiers
ICP Metals	None		
Arsenic	mg/L	0.20U	0.20
Barium	mg/L	0.010U	0.010
Cadmium	mg/L	0.010U	0.010
Chromium	mg/L	0.020U	0.020
Lead	mg/L	0.10U	0.10
Selenium	mg/L	0.20U	0.20
Silver	mg/L	0.010U	0.010

LABORATORY CONTROL SAMPLE & LCSD: 44443 44444

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCSD Qualifiers
ICP Metals	None									
Arsenic	mg/L	1	1.0	1.0	104	105	92.6-113	0.957	20	
Barium	mg/L	1	1.0	1.0	101	102	88.6-115	0.985	20	
Cadmium	mg/L	1	0.99	0.99	99.2	98.6	88.1-112	0.607	20	
Chromium	mg/L	1	1.0	1.0	99.9	101	90.3-111	1.1	20	
Lead	mg/L	1	1.0	1.0	100	101	91.2-113	0.995	20	
Selenium	mg/L	1	1.0	1.0	102	103	90.6-112	0.976	20	
Silver	mg/L	1	1.0	1.0	103	104	94.2-112	0.966	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44446 Original: 44445 [Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	Max MS RPD	MSD Qualifier
ICP Metals	None									
Arsenic	mg/L	0.29	1	1.5	1.5	126	119	70-130	5.71	20
Barium	mg/L	0.17	1	1.1	1.1	95.2	96	70-130	0.83	20
Cadmium	mg/L	0.008	1	0.87	0.88	86.7	87.9	70-130	1.37	20
Chromium	mg/L	1.6	1	1.8	1.9	24.8**	29.2**	70-130	16.3	20
Lead	mg/L	0.036	1	0.89	0.89	88.9	88.9	70-130	0	20
Selenium	mg/L	0.026	1	1.4	1.4	142**	141**	70-130	0.70	20
Silver	mg/L	0.082	1	1.5	1.5	140**	140**	70-130	0	20



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

QC Batch: MET/6074 Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A
Associated Lab Samples: 93990001
METHOD BLANK: 44447

Parameter	Units	Blank Result	LOQ Qualifiers
Mercury	ug/L	0.20U	0.20

LABORATORY CONTROL SAMPLE: 44448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits Qualifiers
Mercury	ug/L	5	5.2	105	75-125

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 44450 Original: 44449 [Spiked HSN = 93990001]

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit RPD	Max MS RPD	MSD Qualifier
Mercury	ug/L	1.4	5	6.8	6.9	108	110	75-125 1.83	20	



QUALITY CONTROL DATA

Workorder: 9399 ECBC DEMIL EFFLUENTS

QC Batch: SPC/5331 Analysis Method: EPA 415.3
QC Batch Method: EPA 415.3
Associated Lab Samples: 93990001
METHOD BLANK: 44501

Parameter	Units	Blank Result	LOQ Qualifiers
Total Organic Carbon {TOC}	mg/L	0.50U	0.50
LABORATORY CONTROL SAMPLE & LCSD:		44502	44503

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max LCS RPD	LCSD Qualifiers
Total Organic Carbon {TOC}	mg/L	4.3	3.7	3.8	87.1	89.2	85-111	2.38	20	
MATRIX SPIKE SAMPLE:		Original: 44504							[Spiked HSN = 93990001]	

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon {TOC}	mg/L	15	5000	19000	377**	70-130	



QUALITY CONTROL DATA QUALIFIERS

Workorder: 9399 ECBC DEMIL EFFLUENTS

QUALITY CONTROL PARAMETER QUALIFIERS

[1] The instrument response for this analyte was measured using manual integration.



TERMINOLOGY & ABBREVIATIONS (ENV)

Terms:

AIPH = US Army Institute of Public Health

DF = Dilution Factor

DUP = Duplicate Analysis

HSN = Horizon Sample Number (Lab Number).

J = The reported result is an estimated value; the result is between the method detection limit (MDL) and the limit of quantitation (LOQ).

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

LOQ = Limit of Quantitation

LS = Laboratory Sciences

MDL = Method Detection Limit

MS = Matrix Spike

MSD = Matrix Spike Duplicate

Qual = Data Qualifier

RPD = Relative Percent Difference

SML = Sample Management Laboratory (AIPH)

(S) = Surrogate Standard (Found in Analytical Results and QC Listings)

U = The analyte/element was not detected at or above the limit of quantitation (LOQ).

Uncert = Measurement Uncertainty (Reported in Radiochemical Analyses Only)

** Indicates QC failure. For example, recoveries or relative percent difference (RPD) out of range.

Units:

% = percent

cc = cubic centimeter

cm = centimeter

cm² = square centimeter

cpm = counts per minute

dpm = disintegrations per minute

f = fibers

g = gram

in² = square inch



kg = kilogram

L = Liter

m3 = cubic meter

MFL = million fibers per liter

mg = milligram

min = minute

mL = milliliter

mm2 = square millimeter

mm3 = cubic millimeter

MPN = most probable number

ng = nanogram

NTU = Nephelometric Turbidity Units

pCi = picocurie

pg = picogram

ppb = parts per billion

ppm = parts per million

S = siemens

struct = structures

TON = Threshold Odor Number

uCi = microcurie

ug = microgram

uL = microliter

umhos = micromhos (conductivity unit)

umole = micromole



The following page(s) comprise the
SML Documents

CHAIN OF CUSTODY

INSTALLATION - ECBC
PROJECT NUMBER - _____
PROJECT OFFICER - Bill Bruey
TURN AROUND TIME - (PLEASE X ONE)
☐ STD (28 CALENDAR DAYS) ☐ HIGH (14 CAL. DAYS) ☒ TOP (7 CAL. DAYS)

PRESERVATIVE (See Codes)

ANALYSIS REQUESTED

[illegible]

Shipment Method -	Date Shipped -	Date & Time	Comment/Remarks
Reinquished By:	Date & Time	Accepted By:	Date & Time
<i>2/3 Bruck</i>	<i>19 Nov 13</i>	<i>[Signature]</i>	<i>11/19/13/1020</i>
	<i>1020</i>		

MATRIX CODES: AII(A): Biological Liquid(BL); Biological Solid(BS); Bulk(B); Drinking Water(D); Frag (F); Oil(O); Paint Chip(P); Soil/Sediment/Sludge(S); Waste Water(WW); Water(W); Wipe(WI)
 PRESERVATIVE CODES: 4C - Ice only H - HCl+ice N - HNO3+ice S - H2SO4+ice Na - NaOH+ice AA - Ascorbic Acid O - Other (specify)



The following report(s) comprise the
Contractor Data Report(s) for Analytical Tests
performed at contract laboratories
in support of the US Army Public Health Command.

**Microbac Laboratories, Inc.**

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

SAMPLE SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
93990001 12-0026-73	13K1185-01	Water	Not Specified	11/19/2013 08:00	11/19/2013 16:50

Microbac Laboratories, Inc., Baltimore Division

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Page 2 of 27

**Microbac Laboratories, Inc.**

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

CASE NARRATIVE

Public Health Command

Inorganics-Full Group

Heidi Taylor

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

1 sample(s) were received by Lewis B. Gunn III of Microbac laboratories, Baltimore Division on 11/19/2013 4:50:00 PM and sample(s) condition(s) were checked and found to be acceptable unless otherwise noted in the 'Cooler Receipt Log' or 'Statement of Qualifications' sections of this report. The samples were logged into the LIMS by Lewis B. Gunn III on 11/21/2013 3:28:00 PM and compared to the client DQO. Any deviations from the client DQO and method specific quality control requirements are noted in the 'Statement of Data Qualifications'.

Other Notes/Comments:

Page 26 blank

STATEMENT OF DATA QUALIFICATIONS

All samples recieved in proper condition unless otherwise noted below.

All quality control parameters were meet unless otherwise noted below.

Qualifications:

Sample received past holding time; analysis best performed at time of collection.

Analyte & Samples(s) Qualified:**pH**

13K1185-01[93990001 12-0026-73]

Qualifications:

pH@20.3°C

Analyte & Samples(s) Qualified:**pH**

13K1185-01[93990001 12-0026-73]

Microbac Laboratories, Inc., Baltimore Division

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

**Microbac Laboratories, Inc.**

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

93990001 12-0026-73**13K1185-01 (Water) Sampled: 11/19/2013 08:00; Type: Not Specified**

Analyte	Result	Reporting Limit	Units	Prepared	Analyzed	Analyst	Method	Notes
---------	--------	--------------------	-------	----------	----------	---------	--------	-------

Microbac Laboratories, Inc., Baltimore Division**Wet Chemistry**

pH	6.60	0.100	pH Units	112213 0730	112213 0820	LCR	SM (20) 4500H B	H6, Z10
Total Dissolved Solids	220000	1000	mg/L	112213 1648	112513 1300	EWM	SM (20) 2540 C	
Total Suspended Solids	2700	100	mg/L	112213 1609	112513 1115	EWM	SM (20) 2540D	

Microbac Laboratories, Inc., Baltimore Division

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

A handwritten signature in black ink, appearing to read "Michael D. Arbaugh", is written over a horizontal line.

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager



Microbac Laboratories, Inc.

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

Wet Chemistry - Quality Control Summary

Microbac Laboratories, Inc., Baltimore Division

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1347173 - WetChem Water Prep

Blank (1347173-BLK1)

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Suspended Solids	ND	0.50	mg/L							U
------------------------	----	------	------	--	--	--	--	--	--	---

LCS (1347173-BS1)

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Suspended Solids	100	5.0	mg/L	100.0		100	90-110			
------------------------	-----	-----	------	-------	--	-----	--------	--	--	--

Duplicate (1347173-DUP1)

Source: 13K1094-01RE1

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Suspended Solids	27	2.5	mg/L		28			3.64	10	
------------------------	----	-----	------	--	----	--	--	------	----	--

Batch 1347187 - WetChem DW Prep

Blank (1347187-BLK1)

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Dissolved Solids	ND	10	mg/L							U
------------------------	----	----	------	--	--	--	--	--	--	---

LCS (1347187-BS1)

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Dissolved Solids	22000	100	mg/L	20000		108	90-110			
------------------------	-------	-----	------	-------	--	-----	--------	--	--	--

Duplicate (1347187-DUP1)

Source: 13K0267-01

Prepared: 11/21/2013 Analyzed: 11/22/2013

Total Dissolved Solids	170	10	mg/L		170			1.18	10	
------------------------	-----	----	------	--	-----	--	--	------	----	--

Batch 1347228 - WetChem Water Prep

Blank (1347228-BLK1)

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Dissolved Solids	ND	10	mg/L							U
------------------------	----	----	------	--	--	--	--	--	--	---

LCS (1347228-BS1)

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Dissolved Solids	22000	100	mg/L	20000		110	90-110			
------------------------	-------	-----	------	-------	--	-----	--------	--	--	--

Microbac Laboratories, Inc., Baltimore Division

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager



Microbac Laboratories, Inc.

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

Wet Chemistry - Quality Control Summary

Microbac Laboratories, Inc., Baltimore Division

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 1347228 - WetChem Water Prep

Duplicate (1347228-DUP1)

Source: 13K1185-01RE1

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Dissolved Solids	220000	1000	mg/L		220000			0.0451	10	
------------------------	--------	------	------	--	--------	--	--	--------	----	--

Batch 1347229 - WetChem Water Prep

Blank (1347229-BLK1)

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Suspended Solids	ND	0.50	mg/L							U
------------------------	----	------	------	--	--	--	--	--	--	---

LCS (1347229-BS1)

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Suspended Solids	110	5.0	mg/L	100.0		110	90-110			
------------------------	-----	-----	------	-------	--	-----	--------	--	--	--

Duplicate (1347229-DUP1)

Source: 13K1147-01

Prepared: 11/22/2013 Analyzed: 11/25/2013

Total Suspended Solids	1.5	2.5	mg/L		1.5			0.00254	10	U
------------------------	-----	-----	------	--	-----	--	--	---------	----	---

Batch 1348001 - WetChem Water Prep

LCS (1348001-BS1)

Prepared & Analyzed: 11/22/2013

pH	7.01		pH Units	7.000		100	99.3-100.7			
----	------	--	----------	-------	--	-----	------------	--	--	--

LCS (1348001-BS2)

Prepared & Analyzed: 11/22/2013

pH	7.00		pH Units	7.000		100	99.3-100.7			
----	------	--	----------	-------	--	-----	------------	--	--	--

Duplicate (1348001-DUP1)

Source: 13K1185-01

Prepared & Analyzed: 11/22/2013

pH	6.60	0.100	pH Units		6.60			0.00	200	
----	------	-------	----------	--	------	--	--	------	-----	--

Duplicate (1348001-DUP2)

Source: 13K1211-01

Prepared & Analyzed: 11/22/2013

pH	8.05	0.100	pH Units		8.05			0.00	200	
----	------	-------	----------	--	------	--	--	------	-----	--

Microbac Laboratories, Inc., Baltimore Division

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager

**Microbac Laboratories, Inc.**

Baltimore Division

2101 Van Deman Street • Baltimore, MD 21224

Phone: 410-633-1800

Fax: 410-633-6553

www.microbac.com

CERTIFICATE OF ANALYSIS

Public Health Command

Contract #W91ZLK-09-P-1505, Bldg E2100, Rm 201

APG, MD 21010-5422

Project: Inorganics-Full Group

Project Number: 9399

Project Manager: Heidi Taylor

Report: 13K1185

Reported: 11/26/2013 15:52

Qualifiers/Notes and Definitions**General Definitions:**

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Microbac Laboratories, Inc., Baltimore Division

H6 Sample received past holding time; analysis best performed at time of collection.
U Sample concentration is less than the MDL.
Z10 pH@20.3°C

Analysis Qualifiers/Notes:**Microbac Laboratories, Inc., Baltimore Division**

Z10 pH@20.3°C
H6 Sample received past holding time; analysis best performed at time of collection.

Microbac Laboratories, Inc., Baltimore Division

Michael D. Arbaugh For Melanie C. Duszynski, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.